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THE

VETERINARIAN.

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Communications and Cases.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.G.S., F.L.S., &c. &c.

(*Continued from* vol. xlvii, *p.* 901.)

The plants next to be considered are arranged under the head of—

Daphnales—The Daphnal Alliance.

These differ greatly from the preceding, in that those were small and usually insignificant herbs, while the plants to be considered are for the most part shrubs or trees, according to Professor Lindley.

"The Daphnal Alliance consists almost exclusively of shrubs and trees usually evergreen, and often of large dimensions. It is defined by its flowers being monochlamydeous, or, if there be a corolla, by the quasi-petals having altogether the colour, texture, and quality of the calyx. It differs from the Ficoidal Alliance in the total absence of albumen and its great almond-like embryo; nevertheless, its Daphnads approach Ficoidals in consequence of the resemblance between some Passarines and Scleranths. With Rosals it agrees in the nature of its embryo, but is distinguished by the want of petals, or, failing that distinction, by its ovary having a vertical style, which in Rosals always stands more or less obliquely with respect to the ovary. This renders it probable that the fruit of Daphnads is really composed of two

or more valvate carpels cohering round a single ovule, as happens in the order of Buckwheats, while in Rosals the carpels are absolutely simple.

"If we regard the further end of the chain of Daphnals we find that Laurels touch Calycanths among Rosals. Laurels, too, indicate a tendency towards the Declinous series, in consequence of their flowers being occasionally unisexual, and seem to bring Daphnals into the vicinity of Plume Nutmegs.

"There is also a very strong approach on the part of Daphnals to Rhamnals, as indicated by the tubular calyx of the latter and their constant tendency to lose their petals. In fact, the two alliances must stand in actual contact, for there is little to distinguish them except the simple fruit of the one and the compound fruit of the other."*

Under the alliance as so described we find four natural orders arranged, but we shall only dwell upon the following:

1. Thymelaceæ—Daphnads.—*Anthers bursting lengthwise; apetalous or polypetalous.*

2. Lauraceæ—Laurels.—*Anthers bursting by recurved valves; leaves perfect.*

3. Cassythaceæ—Dodder Laurels.—*Anthers bursting by recurved valves; leaves mere colourless scales.*

Of these the first has as many as 38 genera and 300 species. The second 46 genera and 450 species, whilst the latter is *sui generis* with only 9 species.

1. *The Daphnads* are well represented by two native shrubs, the *Daphne Mesereum* and the *Daphne Laureola.* The first of these, though rare to our woods, is well known in the garden as a shrub whose flowers come out in bright mauve clusters in very early spring, soon to be surrounded by the leaves, and to be followed by scarlet berries.

The coming of the flowers before the leaves is thus referred to by Cowper:

> "Though leafless, well attired and thick beset
> With blushing wreaths, investing every spray."

The *Daphne Laureola,* on the contrary, is a bright evergreen, and its winter aspect in our thick woods is very agreeable. It is one of our first woodland plants to flower, and its purplish-green berries succeed in early summer. Both species are renowned for most active properties, as says the late Dr. Lankester of the Mezereon, and it will equally apply to the Laureola:

* 'Vegetable Kingdom,' p. 529.

"The whole plant is a powerful irritant, both bark, leaves, and fruit acting poisonously if taken in large quantities, and readily causing inflammation when applied to the skin and mucous membranes. A few of the berries have been known to cause death when swallowed, and the decoction of the bark, when administered medicinally, has produced unpleasant symptoms. Dr. Taylor, in his work on poisons, details several cases of poisoning from swallowing the berries, which, however, were treated in time to prevent fatal results."

The same author remarks on the berries of the *D. Laureola*, that "they are a favorite food of singing birds, though poisonous to all other creatures."

This circumstance is curious, but it is paralleled by an observation we have recently made upon the seeds of that very poisonous plant, the *Datura tatula*. Having a great quantity of these accidentally strewed in our farmyard, we were alarmed at watching turkeys, guinea and common fowls eating them up most voraciously, but our anxiety was fruitless, as in no single case was mischief done.

In growing this plant, too, the crop suffers greatly from the attacks of the common snail, which always comes great distances to feed upon them, which seem to make them fat enough for the French dish of stewed snails.

These and the like facts are very interesting, as showing the varied effects of the same plant on different animals.

The Mezereon has a place in the 'Pharmacopœia,' and we have known the *D. Laureola* used for it The moistened bark of both plants is sometimes used as a vesicant, and especially on the Continent. We are not aware of any use for these in veterinary practice, but Dr. Pereira records that a farrier gave some pills formed of the leaves to procure abortion, and its action was very violent.

2. *The Lauraceæ.* The laurel family is well known to us by a plant common to the shrubbery, namely, the *Laurus nobilis*, or bay tree, which was probably the classic laurel, and not the common cherry laurel, which is too often confounded with it.

The aromatic nature of the bay tree will at once be made out from tasting its leaves and bark, and this property has caused bay leaves to be extensively used in the kitchen. No less so the barks known as cinnamon and cassia, which are derived from trees of the order, as, indeed, are some sorts of nutmegs, or rather seeds used in lieu of nutmegs. The sassafras of the shops is derived from a large American tree of the order Lauraceæ.

These are enough to show the valuable nature of many of the plants adverted to. Many are used as spices, and several find their way into numerous medical compounds. Few, if any, are employed by the veterinary practitioner, but the "knowing carter," ever ready to tamper with his master's horses, he uses powdered bay berries in his horse powders, presumably to "foine the cwoat;" it is, then, to be met with in the shops of most country druggists, and it is to this purpose that the greater part of the imported berries are used.

Still, we cannot help thinking that some powerful remedial agents might be obtained by the veterinary practitioner by due attention to an order of plants containing so many and such varied products, many of which are likely to prove, not only certain, but constant in their peculiar effects.

But, perhaps, the general employment of camphor, a drug prepared from the Camphor Laurel, in so many preparations, has cast all the others in the shade. This drug is described by Professor Tuson as entering into the composition of no less than a dozen officinal preparations, besides which it is constantly prescribed in various forms for both internal and external use. Professor Tuson describes its employment as follows:

"Actions and Uses.—*Internally*:—In large doses, irritant and narcotic poison; in medicinal doses, stimulant, sedative, anti-spasmodic; also, after long exhibition, diuretic. Occasionally given in tympanitis, and combined with opium or digitalis in common cough.

"*Externally*:—Discutient and anodyne for chronic sprains, bruises and tumours, also for infiltration into the cellular tissue; added to oil or ointment of cantharides, or sprinkled in fine powder over linseed poultices, it allays irritation, although for this purpose extract of belladonna is usually preferred."

We must not leave the laurels without directing attention to their curiously formed stamens. In these the anthers open for the exit of the pollen by four recurved valves, having much the appearance and manner of action of those trap doors and windows through which Mr. Clown makes his extraordinary leaps into all sorts of places during a Christmas harlequinade.

3. The Dodder Laurels are here introduced on account of the peculiarity of the stamen just described. A single genus of these is found to grow in the hottest parts of the world, living parasitically on other plants. They have the appearance and mode of growth of our dodders, but yet

their flowers are essentially of the type of those of the laurels; but how shall we make out any connection with these latter? Botanists say that there is no doubt about the identity of *Laurus nobilis* (say) and the *Cassytha filiformis*, or Dodder Laurel; but we agree with Professor Lindley when he says, "It seems to me, however, better to keep them distinct until some connecting link shall have been discovered, if there be such a thing."

Nothing is known of any use for these plants, but it must be confessed that a parasitic dodder-like-plant with so much of the structure of the large Lauraceæ is an exceedingly interesting subject for the contemplation of the vegetable physiologist.

VETERINARY TOXICOLOGY—THE ACTION OF THE SOLANACEÆ ON THE HORSE.

By John Gerrard, M.R.C.V.S., Market Deeping.

Several of the genera of this natural order display narcotic properties, not so marked, however, as the *Atropaceæ* to which, in botanical characters, it is very closely allied; indeed, the two orders are regarded by some authors as one, differing merely in their æstivation, the *Atropaceæ* having an imbricate, while the *Solanaceæ* has a valvate æstivation. In geographical distribution they are similar, being chiefly natives of the tropics.

The narcotic properties of the division *Atropaceæ* are best marked, and all its genera have the peculiar property of dilating the pupil. It furnishes us with *Atropa, Belladonna, Hyoscyamus niger, Nicotiana, Tabacum,* and other valuable agents of the pharmacopœia.

The genus *Solanum,* which gives the name to the order, is best represented by the common potato, *Solanum tuberosum,* but it also includes a number of useful species which are either universally cultivated in suitable climates, or are weeds extending over a great range of country. It is known by having a flat corolla of five triangular lobes, as many converging anthers, each opening at the point by a pair of pores, and a berry of some kind for its fruit.

To this genus I wish to call attention, as being possessed of qualities analogous to others of the same order, notwithstanding its extensive and almost universal use by the human race.

I am not aware that poisonous properties have ever been ascribed to the potato, and I should be loathe to suggest their existence in such a universal and indeed necessary article of food, the hope and strength of some whole countries, had not a case occurred in this quarter a few days ago, which I cannot but regard as a clear instance of poisoning from, I am convinced, partaking too freely of potatoes in a raw state.

The subject was an aged mare, the property of a coal carter near here, which had been in his possession over ten years, had worked hard, and been well fed, without ever being seriously indisposed. About a week before the owner applied to me, the mare had failed in her appetite, slavered very much when she attempted to masticate, and had a very haggard appearance; the animal, however, was kept at work all the while. On examining the mouth I found a hollow place in the upper row of molars, in which was jammed a number of whole beans, peas, and chaff, which were with difficulty removed, leaving only a decayed fang from which a very unpleasant odour proceeded. I cleaned out the cavity and levelled the asperities on the other teeth. The owner was anxious that the mare should have a physic ball, or something to give her an appetite. As she had eaten little for a week I did not, however, give her anything, thinking that she was too empty and too exhausted to be immediately benefited by medicine. Instead of physic I recommended a good feed of beans, bran, and oats. The owner continued to work the animal all day until five o'clock, when he gave her, by his own confession, three quarters of a peck of potatoes which she ate greedily, and at nine o'clock she had a liberal allowance of whole peas, beans, and chaff, which had been her ordinary provender for some time previously, and which she partook of freely. About five o'clock next morning, he found her rolling about in pain, and taking her out, gave her nearly an hour's walking exercise, when she broke out into a profuse perspiration; he then replaced her in the stable.

At nine o'clock she presented the following symptoms: general appearance haggard; pulse 25 and weak; heart's action sharp and weak; breathing natural, or rather below the normal number, with an occasional deep-drawn sigh; extremities and surface of body cold; belly tucked up; no pain on pressure, nor any manifestation of pain at all; no attempts to lie down, but the standing position was maintained with difficulty. When made to move she staggered and almost fell; the extensor muscles of the hind extremities seemed all but paralysed, allowing her to knuckle over at the pasterns; the eyes

were glassy, and pupils dilated; the conjunctival membranes were red and turgid; the head hung down and an occasional eructation of gas from the stomach occurred. The mouth was very fœtid, the tongue contracted and surrounded with a strange pasty mucus; the mucous membranes were pallid and cold.

On looking round the box a quantity of liquid fæces was observable on the floor and walls, but the purging had ceased for some time.

Diagnosis.—State of collapse from superpurgation or inflammation.

Prognosis.—Death.

I was at a loss to account for this extreme prostration, and could get no information, as the owner, about seven o'clock, had left the mare in charge of his wife, when the urgent symptoms subsided, to go to market. The wife could give no information regarding her excepting that she had eaten her supper better than she had done for some time previously, and that she had been engaged carting home potatoes from the field the previous day.

I did not suspect the potatoes at that time, but thought it probable that the owner might have got a ball for her at the druggist's, and I confess to have had an inward feeling of satisfaction that some special providence had prevented me from yielding to his wish to give a dose of physic. I administered

℞ Sp. Ether Nitratis;
Æth. Sulph.;
Sp. Amm. Aromat., ana ℥j;
Aq. Menthæ pip., Oss.

This revived the animal somewhat, and I thought it possible if effusion into the bowel was not too extensive, and the viscosity of the blood not too confirmed, that with plenty of diluents and stimulants she might rally, especially as she had been a healthy animal. I therefore followed up with two wine-glassfuls of brandy in flour gruel, applied a mustard poultice to the abdomen, and covered her warmly over.

The effects of the stimulants soon passed away, only to be succeeded, however, by a marked embarrassment of the respiration; the pulse began to falter, and finally stopped, while the heart laboured vigorously; the mucous membrane became more palid, the countenance more anxious, the extremities more feeble, and she fell to the floor, almost a lifeless trunk, about two and a half hours after my first seeing her, or nearly six and a half hours after being first observed to be ill.

Sectio Cadaveris an hour after death.—On removal of the integument the body had an anæmic hue, but had nevertheless the appearance of having been well nourished, the subcutaneous fat being abundant. In cutting off the extremities very little blood escaped, and that which did had a very venous hue. The peritoneum was loaded with fat of a dark colour, the surface of the intestines was congested throughout, but there was no inflammation in any part, nor any serum in the peritoneal cavity. The bladder was empty and contracted, the liver and spleen engorged with blood; the stomach was moderately filled with whole peas, chaff, and a few broken beans; the mucous membrane was healthy; the small intestines contained a turbid, glairy fluid. The mucous membrane was slightly inflamed and presented a rough, mammillated appearance in some parts, while in others it had a bright livid colour when the turbid fluid was removed.

Inflammatory action was most apparent in the cæcum and colon, the latter of which contained a large quantity of decomposing injesta that frothed and bubbled up when allowed to escape from the fermentation which had commenced in it. The mass was unlike the contents of any other intestine I had ever seen. The effects of inflammation were not so well marked as in cases which run an equally rapid course, where we generally find extensive exudation of bloody serum nearly half an inch thick, of the consistence of jelly, when the animal may be said to die from hæmorrhage.

The mucous membrane was of a bright livid colour, the result of functional excitement rather than of inflammatory effusion. The effect on the system was the same, however, but was evidently induced by a different cause than what usually induces enteritis; hence the peculiarity of the case. Nor were the inflammatory symptoms well marked during life, and this, with the previous history of the animal and the condition of the injesta, induced me to think a poison had been introduced into the body, but of what nature I could not at that time determine.

The whole contents of the intestinal tract were in a fluid condition, with the exception of those of the stomach, the contents of which were of normal consistence and appearance. The rectum bore very evident traces of increased functional activity. The posterior cava was full of black tarry-looking blood; the kidneys were gorged with blood.

The lungs were congested, the right side of the heart and large vessels were full of dark blood, while the left chambers were all but empty, showing the mode of death to have been *apnœa*, or death beginning at the lungs; in which the blood

undergoes some change, so as to unfit it for the nutrition of the tissues.

The blood coagulated readily on exposure, and under the microscope the globules were grouped together in large irregular masses. Many of them presented a caudate appearance and crenated and irregular outlines. The addition of a drop of water gave them a rounder form and clearer outline, and brought into view numerous granules and molecules, while here and there in the field an amorphous filament could be seen.

No *vibriones* or *bacteria* were observed; upon the whole the case was peculiar, and I could not connect it with anything I had ever seen or heard of before; until the owner told me of the potatoes which the mare had partaken of the previous day, not only what he had given her, as already mentioned, but what she had eaten while carting them from the field.

I am convinced that the potatoes were the cause of death, and no theory will account for all the phenomena observed, unless we admit the development in them of the poison, known to be present in the *Order* and in the fruit of the potato, which is known to possess poisonous properties, and proved fatal in the case of a young lady æt. 14, as reported by Mr. Morris, of Merford, in the *British Medical Journal*, 1859, p. 719.

Distension of the rumen in cattle is often met with, as the result of a too liberal allowance of potatoes, and even death sometimes results from the same cause, generally attributable to mechanical interference with the process of respiration; but if a poisonous principle be developed in the one case, reasoning analogically, it must be the same in the other, even although the phenomena observed differ in the different species, probably the result of anatomical confirmation. The fact that digestion takes place to a large extent in the intestines of the horse, and the extreme vascularity of them in consequence, may explain the tendency to inflammatory diarrhœa, in such cases, in this animal, and the absence of flatulency, so very marked a feature of the same affection in ruminants.

Closely connected with this subject is the question of subcutaneous injection of morphia, in enteritis and other inflammatory affections of the intestines of the horse, which run their course so suddenly and uncontrollably in him. Whoever can utilise this, or any other agent so as to make it effectual in curing this hitherto *incurable?* disorder, will deserve well of the profession, confer a great boon on the owners of horses, and add materially to his own reputation.

THE ACTION OF RANUNCULACEÆ ON THE HORSE.

By George Gray, M.R.C.V.S., Newbury, Berks.

The communication on the above subject in the September number of the *Veterinarian* induces me to trouble you with the history of two cases of a similar nature to those recorded by Mr. Gerrard, which came under my observation a little time ago. The particulars had lain dormant in my mind until I read Mr. Gerrard's communication, and they so closely resemble those mentioned by him that I offer them in confirmation of his theory of the action of the plant.

Case 1.—A half-bred foal six weeks old, supposed to have got influenza, was observed to vomit. The animal had been with its dam in a grass meadow and was taken ill in the middle of the day. I saw it about 2 p.m., or two hours after, when the following symptoms were present. The general appearance presented nothing unusual ; the breathing was slightly accelerated ; there was a milky discharge from the nostrils, as it had been sucking a few minutes before my arrival. While the attendant was relating the symptoms he had seen, the foal began to retch and vomit, and a considerable quantity of milky fluid was ejected through the nostrils. This was followed by a snuffling cough, and at intervals the animal would gulp as if constricted about the pharynx, but no retching followed as described by Mr. Gerrard. I thought there was some foreign object in the œsophagus, but on manipulating I found none. The throat was tender and coughing was easily excited.

I applied a stimulating liniment to the throat and gave an aperient drink ; no vomiting followed the administration of the medicine, and on the following day the foal was quite well.

Case 2.—A half-bred foal, one month old, was out at grass during the day, and lay in a loose box at night, the dam having bran, oats, and haychaff. When put into the box at night it was noticed to be very sick and ill. I saw it at 9 p.m., two hours after the attack commenced, when I found it lying quiet. On being put up it showed symptoms of colic, kicking its belly with the hind feet, and twisting its tail persistently, and there was also erection of the penis. The breathing and pulse were quicker than usual ; in a few minutes the colicy symptoms passed off. After sucking for a few minutes the foal began to retch, the spasms recurring a

few times, until the contents of the stomach were ejected with comparative ease through the nostrils. This was followed by a snuffling cough and symptoms of colic, and at intervals the foal would gulp as if swallowing something; vomition occurred twice during my stay of about two hours. The fæces were irregular, scanty, and dark coloured. I administered an anodyne and an aperient draught with some little difficulty, and part of it was returned through the nostrils.

Next day I found the foal pretty well, all the urgent symptoms had passed off, so I gave a febrifuge draught. I was requested to see the animal on the next morning, as it was worse; no vomition, however, had occurred since the administration of the medicine, but the foal seemed to be suffering from some irritant in the bowels. The symptoms yielded to an aperient draught and recovery was complete.

I may mention, however, that these foals were the property of different owners, but whose lands were adjacent, in a low undrained situation, in which the herbage was very short and the buttercups were in great profusion. I was at a loss at the time to account for the cause of this singular occurrence, but now I am of opinion that the foals must have cropped some of the buttercups, as they were very luxuriant; indeed there was little else in the pasture.

Regarding the theory of vomition propounded by Gerrard I may say, that although I had always believed, as is generally taught, that vomition can only occur after rupture, I am now convinced to the contrary, but whether rupture be produced by vomition in all cases where it occurs I would not like to say, although these cases fully bear out the theory that vomition does occur without rupture.

In conclusion, I have to thank Mr. Gerrard for drawing attention to the subject, which I think illustrates the importance of a knowledge of botany to the student of veterinary medicine, and confirms the truth of the adage of "*practice with science.*"

JAUNDICE IN A CALF.

By D. H. Tombs, M.R.C.V.S., Burford, Oxon.

A gentleman in this neighbourhood requested me on Saturday, September 12th, to look at a calf which he thought had been injured about its abdomen. Upon examining the

animal I immediately perceived that it was suffering from jaundice, or, as it is called here, "the yellows." The natural colour of the calf was white, but now a yellowish tinge pervaded the whole body, not excepting the horns, and, on the hair being parted in different parts, the skin was found completely yellow in appearance. The owner, in answer to my question, said that he had fancied the calf was more dull than usual two nights before, but as it had since partaken freely of its usual food until the morning before I saw it, he had taken little or no notice of the matter.

The calf presented the following symptoms, viz. dulness and disinclination to move; pulse and respiration very quick and much increased on the animal being moved. There was, as before stated, a decidedly yellow appearance of the skin, and the hair was rather "staring," the surface of the body being dry and somewhat chilly. At the flanks a hollow appearance was observable, which caused the abdomen to look larger than usual. Pain, but not severe, was manifested upon the right side of the abdomen being pressed. Rather above the average amount of urine was passed, but it was brown and thick. No signs of any fæcal matter having been recently passed could be found, but when the first dose of medicine was being administered a small quantity was expelled, but it was quite yellow and glazed very much. A purgative drench as under was at once given, viz.

℞ Aloes Barb., ʒij;
P. Myrrh., ʒss;
P. Rhubarb, ʒss;
Calomel, ϑj;
P. Carui Sem., ʒj.

and the following stimulant left for administration twice in the day, viz.

℞ Spt. Eth. Nit., f ʒj;
Comp. Tinc. Gent., f ʒj.

On the following day, Sunday, the symptoms had not improved, and the calf was weaker; the purgative had not acted at all. I repeated the medicines, adding to the drench an ounce of gamboge, and increasing the calomel to a drachm, giving orders for the calf to be drenched frequently with linseed tea and warm ale.

On Monday the calf was weaker still, lying down and very disinclined to rise, in fact, it could hardly do so. There was no action as yet on the bowels. The linseed tea and stimulants were repeated and the following drench given, viz.

℞ Mag. Sulph., lb. ss;
P. Myrrh., ʒj;
Zingib., ʒj.

and after an interval of an hour another drink composed of

℞ Aloes Barb., ℥ij ;
Gamboge, ℥j ;
Hyd. Chl., ℥j ;
P. Caruí Sem., ℥ss.

A drench of half the strength of the latter was given at night.

Tuesday.—When I arrived I was told the calf had gradually become weaker and had died some two hours previously. When dying it had passed a very small quantity of fæcal matter, which seemed to be composed of mucus and bile.

Post-mortem examination.—I found the fat in all parts of the body, especially the more liquid, near the joints, was of a bright yellow colour, resembling somewhat prime beef fat. The lungs were healthy ; the heart showed slight congestion on the upper part of the external surface of the left side, while around the right side of it was what would be considered a great quantity of fat for so young an animal. The stomachs and intestines were in a normal condition, the ingesta in the third stomach was, however, somewhat dry. The spleen presented a very mottled appearance, but was otherwise healthy. The omentum was of a very bright yellow colour. The liver was large, pale, and quite yellow throughout when cut into. The gall-bladder was very much distended and of a dark colour, the bile being very thick and black, similar, in fact, to tar; the lining membrane of the gall bladder also very dark. Some of the lobuli of the kidneys were congested. The bladder was moderately full, the urine being of a dark yellow-brown colour and having a very pungent odour. The blood had a bright appearance.

The calf was, no doubt, affected some days before I saw it. I should mention that it was ten months old and had been thriving rapidly.

As this was a somewhat more obstinate case than is usually met with, I have ventured to send it to you.

CASE OF ACUTE ALVITIS FROM A DOSE OF SULPHATE OF MAGNESIA.

By W. R. Bryan, M.R.C.V.S.L., Londonderry.

The diseases of the digestive organs of ruminants are many and complicated, and some are so acute and actively

fatal that they are not always recognised as belonging to this class. This may be said of alvitis. I fancy that it is not so rare as is imagined, although not so often seen in the acute as the subacute form. Having had a case which I believe to be of this kind, I venture to place it before you.

On the evening of Friday, the 30th ult., a man came for me, who said that his master wanted me immediately to see a cow that had calved that afternoon about 5 o'clock. The animal had calved all right, and a dose of salts, one pound and a half, had been given; soon afterwards the cow began to blow, and then became violently excited.

When I reached the byre I found the animal in a partially comatose state, prostrate and breathing at the rate of 60 per minute; pulse 80, small and sharp; partial coma; horns and ears cold, legs drawn tightly to the body. There was also slight tympanitis I thought at first it was a case of poisoning (as I learned that the cow had shown these symptoms almost before the man had finished drenching her); so asked for the bottle—an ordinary claret bottle had been used. On examination I found salts in the solid state still in it. I inquired how much water had been used to mix them; the reply was "Just the full of the bottle," *i. e.*, the whole pound and a half had been given in as much water as the bottle would hold, together with the salts, so that part of them had gone down in the solid state. I immediately ordered diluents in the shape of thin gruel and exhibited a drench composed of—

℞ Sp. Æth. Nit., ʒjss;
Tr. Aconite, ♏xxx;
Ol. Lini, Sem., ʒvj.

After the administration of the medicine the breathing became much steadier, and in a short time the cow rose to her feet.

It is the custom in this part of the country to visit sick animals only once unless specially sent for again; if they do not recover immediately they are left to chance, or slaughtered and sold for food; in this case the cow did not get well *fast enough*, and was accordingly slaugtered. I did not hear of this till too late to see the viscera, but from what I could gather, the only thing plainly discoverable was that the rumen was discoloured in patches.

PECULIAR DISEASE IN A HORSE.

By "Rebus."

As I consider the following case rather an interesting one, I forward a description of it to you, and should feel obliged if you would give me your opinion as to its true nature. Perhaps some of your readers may have met with similar cases.

The patient is nine years old and a valuable charger.

For some years past he has given trouble by kicking in the stable, often injuring his hind legs; likewise by rubbing his hind quarters and tail to such an extent as to quite disfigure himself.

The practitioner who then had charge of the horse attributed his restlessness to worms, and treated him accordingly, but with little or no good effect, and latterly he had attacks of a more severe nature, associated with the following symptoms: haggard and anxious expression, tossing the head about, ears laid back, grinding the teeth, frequently looking towards the loins, and giving slight kicks with the hind legs. As the fit, if I may so term it, proceeded the horse got more excited, biting at his chest and fore extremities, running rapidly round his box, always in a backward direction, and always from left to right, kicking viciously at the sides of the box, manger, &c., as he went round. These attacks, which assumed the character of delirium, lasted from five to fifteen minutes; at the termination of the attack the animal appeared to be quite exhausted. Perspiration bedewed his body, the respiration and pulse were increased, but in a short time these became natural, and the patient would, to all appearance, be quite well and hearty.

The attacks came on at uncertain intervals; days might elapse without one, or they might appear twice in the same day.

The pulse, respiration, and temperature were natural except during and just after the attack, when of course they were increased from the exertion.

The bowels were sluggish in their action, the urine was scanty, frequently void, and glutinous in character. The appetite was very fastidious at times, at other times natural. The

treatment mainly consisted in the administration of laxatives when required. Two setons were inserted and a blister applied behind the ears, as I considered the disease to be cerebral.

Two other practitioners were called in during the course of the next fortnight, and their opinion was that the urinary organs were the seat of the disease; they recommended counter-irritation to the loins, and a solution of gum acacia to be given, which treatment produced no good effect. A London practitioner, having had the symptoms described to him, said that he thought the case was one of indigestion, and recommended the use of bromide of potassium. This, like the rest of the remedies, failed.

The patient by this time was in a miserable condition, and the question of destroying him was mooted, but as a last chance he was turned out to grass, and had a further allowance of two feeds of oats and hay per day. From that time he began to improve and is now in hard work and good health.

What caused the horse always to move backwards? (not even taking a step forward during the attack); in every attack he travelled in the same direction, *i. e.*, the near side was always the inner side of the circle.

Pathological Contributions.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of November, 1874, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign Ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Antwerp .	London.	Foot-and-Mouth .	5	...	...	...	5	5
Boulogne.	„	„	1	...	...	...	1	1
Hamburg	Hartlepool	„	1	2	...	22	25	25
„	Hull .	„	30	...	...	26	56	56
„	Middlesborough	„	4	...	...	...	4	4
„	Newcastle-on-Tyne	„	51	...	...	..	51	51
Total.			92	2	...	48	142	142

"ALEXANDER WILLIAMS, *Secretary.*

"Privy Council Office,
"Veterinary Department, 14th December, 1874."

CATTLE PLAGUE.

There have been fresh outbreaks of cattle plague in Galicia, Carniola, and Dalmatia; the disease also continues in various parts of Hungary, in Croatia, and the military frontier.

In the kingdom of Poland cattle plague exists in fourteen different places, but chiefly in the province of Lublin.

Cattle plague has broken out at Zara and in the districts of Capo d'Istria, Pisino, and Pola (Istria). The town of Zara and the province of Istria, with the exception of the islands of the Quarnero, have been declared infected. A few cases have also occurred in the village of Cathenara, two miles east of Trieste. All necessary measures to prevent the extension of the malady have been taken.

PLEURO-PNEUMONIA.

Another outbreak of this disease has occurred at Zondorf near Wandsbeck in Holstein; several oxen and cows are reported as being affected.

In the Netherlands the number of cases returned for the month has decreased to seventy-two; this is the lowest recorded for a considerable period.

Inspectors are now appointed solely to examine healthy

cattle in the stables at intervals, especially in those districts where they have reason to believe the disease exists.

In Switzerland the outbreaks in Vaud and Fribourg appear to be suppressed, but pleuro-pneumonia continues in six different stables in the centre of Valois.

FOOT-AND-MOUTH DISEASE.

This disease, which has been raging during the year in Switzerland, still prevails there to a considerable extent. Returns have been sent in from 1259 stables.

Foot-and-mouth disease is also prevalent in Germany to a great extent, and likewise in Belgium and France. Recently several fresh outbreaks have occurred in various parts of this country, particularly in Essex, Sussex, Wiltshire, Yorkshire, and Cornwall.

SHEEP-POX.

This disease prevails in six districts in Stettin; and in four in Koslin; it is also reported to have appeared in Thessaly.

Facts and Observations.

Physiological Antagonism of Poisonous Substances.—Dr. Alex. B. MacDowall gives, in the *London Medical Record*, 22nd April, a summary of the conclusions arrived at by Martin-Damourette and others. Eserine, the active principle of Calabar bean, excites the muscles and produces muscular contractions; it excites the cerebrospinal motor centres, and diminishes the excitability of the nerve-terminations in the muscles. These effects depend on the dose and mode of administration. A large dose will produce convulsions, paralysis of the phrenic nerves, and death by asphyxia; while divided doses will destroy muscular contractility without producing the nervous excitation. We can establish a tolerance of doses which are more than toxical, and which are capable of relaxing tetanized muscles —hence the use of Calabar bean in tetanus. Atropine in

small doses has neuro-paralytic properties, capable of arresting the convulsive action of eserine. M. Martin-Damourette is of opinion that eserine causes contraction of the pupil by a direct action on the constrictor muscle. According to M. Köhler, the antagonism of Calabar bean and of atropine only exists in warm-blooded animals. The same is true of the antagonism between saponine and Calabar bean.—*Edinburgh Medical Journal.*

The Physiological Action of Chloral.—M. Byasson thinks that the longer duration of the action of chloral compared with that of chloroform is due to the slowness of the chemical action, and that the difference in the physiological phenomena is explained by the intervention of formic acid, produced at the same time as the chloroform, and acting under special conditions.—*Acad. des Sci.*, 2nd March. M. Personne made a communication on this subject to the *Acad. des Sci.*, 12th Jan. He is of opinion that the combination of the chloral with albumen explains the longer duration of action of this body compared with chloroform. The first action of chloral on the albumenoid materials of the economy produces chloroform at the expense of their alkali; at the same time, these materials, deprived of their alkali, contract a combination with the undestroyed chloral, and this combination is, in some sort, a reservoir of chloroform. Thus is explained why it is we meet with so small a quantity of chloroform in the blood of animals submitted to the action of chloral. The theory that the action of chloral is in part to be accounted for on the supposition that formic acid is produced, and is subsequently reduced into carbonic acid in the system, M. Personne has endeavoured to disprove experimentally. He gave formic acid to dogs without perceiving the slightest production of carbonic acid, nor did any symptoms of anæsthesia supervene.—*Ibid.*

The Action of Eucalyptus.—The investigations of Theodor Siegen as to the action of eucalyptus are summarized by Dr. T. Lauder Brunton, in the *London Medical Reeord*, 4th Feb. Eucalyptol, according to Siegen, exerts quite as powerful an antiseptic action as quinine. It hinders alcoholic fermentation, and depresses the temperature of the body more than quinine. Eucalyptol, like quinine, hinders oxidation in protoplasm. Siegen considers that eucalyptol in large doses is of great use in the treatment of febrile diseases of respiratory organs, especially

hooping-cough. In several cases it acted as an anthelmintic.

Dr. E. Burdel does not appear to think so highly of this drug. (*Bull Gen. de Thér.* 30th Dec. and *Revue des Sci. Med.* April, 1874.) He considers that, as a febrifuge, it is slow and inconstant in its action; and in the treatment of ague he finds it in every respect inferior to quinine.—*Ibid.*

Chloral for Anatomical Injections.—Dr. Keen, Lecturer on Anatomy, Philadelphia, has lately published an account of some interesting experiments, in which he injected bodies for anatomical purposes with a solution of chloral; the strength varying from five to sixty grains of the hydrate of chloral to the ounce of water. The following may be taken as an example:—"A negro died in the city, 18th February, and lay exposed during the warm weather we had then till 28th February, when he was brought to my rooms. The cuticle was off over all the chest, which was green and crepitant, and the legs were dropsical. Though a large man, I tried the chloral, on 28th February, gr. xv. to ℥j. 12th March—*i.e.*, twelve days after injection, and twenty-two days after death—the subject is perfectly preserved. The cuticle elsewhere is adherent, the chest is natural in colour, the smell is gone, and the specimen of muscular tissue, taken from the abdominal walls, is of admirable colour and consistence." Dr. Keen seems to think that five grains of chloral to the ounce of water will yet prove of sufficient strength for anatomical injections. He is not aware what effect the hot weather of summer may have on subjects injected with a solution of chloral, but he claims for it entire sbperiority in the winter time for all dissections, and especially for the finer and more delicate ones of the skilled anatomist.—*Ibid.*

Apollinaris Water.—As this, the newest, aërated water is becoming exceedingly popular, our readers will probably like to be made acquainted with its composition, which, according to Dr. Weber, is as follows:—one imperial gallon contains 178·5 grains of solid matters in a state of solution, and consisting chiefly of sodium carbonate (87·99 grs.), sodium chloride (32·62 grs.), sodium sulphate (21 grs.), and magnesium carbonate (30·94 grs.). This water is said to be richer in carbonic acid than that of any other spring.

THE VETERINARIAN, JANUARY 1, 1875.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

THE RECENT OUTBREAKS OF FOOT-AND-MOUTH DISEASE.

FOR some months very little has been heard of foot-and-mouth disease, and in the absence of statistics we have been induced to conclude that the infection had once more reached a minimum state of existence. That the malady had died out we did not for a moment believe; indeed, we do not admit that it has ever been entirely absent from this country since its first recognition in 1839.

The fact of no cases being reported, sometimes for long intervals, means, we apprehend, no more than that the disease has assumed such a condition as to attract little or no attention. That it exists in many places without any public notification of its presence being made we have positive proof, and, as a rule, we do not expect to have our attention directed to the subject unless the affection assumes proportions which render it remarkable. When foot-and-mouth disease suddenly extends its area, we are in the habit of calling the accession of disease a fresh outbreak. In time the malady declines and we speak of its cessation; another accession in due course occurs and we speak of the reappearance of the affection. All these terms may be correctly applied to the course of the disease in a district, but they are incorrect when they refer to the whole kingdom. Foot-and-mouth disease has never ceased to exist since its introduction, consequently, it cannot be said to have been eradicated, neither can it be asserted that it has reappeared. The truth is there are always centres of infection in various parts of the kingdom, and from them the disease spreads when the exigencies of trade necessitate the movement of animals.

During the last few weeks several fresh outbreaks of foot-

and-mouth disease have been reported at widely distant points. First we hear of the affection in the Ilford district (Essex); then a serious outbreak is said to have occurred in the neighbourhood of Cuckfield, Sussex; another one is reported from Banbury, and again another, of a serious character, from Wetherby, in Yorkshire.

From the result of inquiries which we have made it appears that in some instances, and probably in all, the disease has spread from fairs, markets, and exhibitions, which are held at this season for the sale of stock.

In spite of the most stringent precautions a considerable risk of the introduction of a contagious disease is increased when large numbers of animals are collected together. A single instance is sufficient to lead to an extensive spread of the malady, and under the most favorable conditions it is impossible to avoid the accidental introduction of an infected beast.

At the recent exhibition of the Smithfield Club, every care was taken to exclude diseased animals, and the arrangements were so far successful that no signs of a contagious malady were observed until the show was nearly over, when one animal was found to be the subject of foot-and-mouth disease. It was removed from the stall in charge of an officer of the local authority, in accordance with the regulations which had been made to meet such an emergency; but as no restriction was placed on the movement of the rest of the animals, it can scarcely be a matter of doubt that some of them carried the disease to other places.

We hear that two of the bullocks exhibited at the Leeds Show were removed in consequence of being attacked with foot-and-mouth disease, and that some of the animals which had been exhibited with them were sent directly to the Newcastle Show. As a natural consequence the disease appeared there also.

Some of the outbreaks in Essex have been traced to animals purchased at Romford Market, and similarly outbreaks in Sussex have followed the introduction into new districts of cattle bought at Horsham and East Grinstead fairs.

It is difficult to devise any effectual system for the prevention of the spread of foot-and-mouth disease in such cases as those which have been alluded to. If the local authority of a district where a fair or show was held exercised their powers to prevent the movement of all the animals exposed for sale or exhibition because one or two cases of disease occurred, no one doubts for a moment that stock-owners would put such an amount of pressure on the legislature that the repeal of the obnoxious clauses would follow as a matter of course.

It is very easy to say, Intercept the disease at the landing places for foreign animals, and it will die out in this kingdom; but in reality there are no facts to warrant such an assumption. With the present facilities for the transit of animals, the same beasts are moved from show to show, and from fair to fair, constantly changing hands, and perpetually incurring new risks, until, at length, they fall victims to infection and assist to spread the disease. Very little is known of the action which local authorities take to prevent the extension of contagious maladies, and less of the effects of the measures which are adopted. Information of this sort would be valuable, and we are glad to observe that at the half yearly meeting of the Royal Agricultural Society, held December 8th, Col. Kingscote, C.B., M.P., in presenting the report of the Veterinary Committee, "suggested that application should be made to the Chairmen of Quarter Sessions in each county to furnish from time to time any information in their power from the reports of inspectors with regard to the working of the Orders in Council and their effect in checking the spread of disease or otherwise."

As the report containing the proposition was adopted, we may have an opportunity of learning what steps have been taken under the Orders of Council for the prevention of contagious diseases.

Review.

Quid sit pulchrum, quid turpe, quid utile, quid non.—Hor.

Die Kolik der Pferde. Sechs Klinische Vorträge. Von F. Friedberger, Prof. an der Königlick Central-Thierarzeneischule in München. Berlin, 1874.

Colic of the Horse. Six Clinical Lectures. By F. Friedberger, Professor at the Royal Central Veterinary School in Munich. Berlin, 1874.

Die Kolik der Pferde und das Wurmaneurisma der Eingeweidearterien. Eine Path.-Anat. und Klinische Untersuchung. Von Dr. Otto Böllinger. Munchen, 1870.

Colic of the Horse and the Verminous Aneurism of the Intestinal Arteries. A Pathologico-Anatomical and Clinical Investigation. By Dr. Otto Boellinger. Munich, 1870.

The writer of the present article has frequently taken occasion to comment upon the vagueness of the term *colic* as employed by veterinarians, who find the expression a convenient refuge when there are obscure abdominal pains about the nature of which they are called upon to deliver a diagnosis.

In medical practice physicians speak of several kinds of colic, because they are often able to discriminate accurately as to the several sources of the symptoms produced; but they do not employ the term as a distinct disease, seeing that it is merely a symptom, the causation of which is extremely various. With human patients we have the unspeakable advantage of communicating our ideas and of receiving answers in return; therefore we are in a position to make a more subtile diagnosis than the veterinarian, let the professional skill of the latter be ever so marked.

Notwithstanding the difficulties here referred to, there are probably not wanting veterinarians who desire to do away with the ambiguity attaching itself to the term *colic*, and who, moreover, would like to get rid altogether of a variety of other yet more objectionable terms employed in animal practice. Such a term as "seedy toe," for example, is to the last degree unscientific and common-place, not to say vulgar, although by custom it has come to be employed as a really useful technical expression.

For some time past we have desired to find leisure to

direct the attention of the veterinary profession to the gravity of the symptoms produced by worms in the horse, and especially to those which, first occasioning only colic, subsequently lead to a fatal issue. We have, indeed, already, through the communications of Mr. Rees Lloyd, recorded several startling instances of equine mortality from the presence of entozoa in the intestinal canal; but so novel are the facts to those who have not had time to look fully into the question of parasitism in relation to *colic* and death, that we cannot pretend to affect surprise at the very little attention which has been paid to the data thus far enunciated (*The Veterinarian*, June, 1874). Observing this negative attitude on the part of those who were likely to be most interested in the subject, it has occurred to us that a careful statement of the conclusions deduced by certain foreign veterinary writers on colic, given in the form of a review, would be more likely to rouse attention (to the surpassing importance of the rôle played by entozoa in the production of disease in our most valuable animals) than any original researches of our own. However much some of our English veterinary friends may seek to ignore the value of patient pathological and entozoal research, it is quite clear that many of the leading members of the profession on the Continent are of a different opinion as to the use of work of this kind; and if proof were wanting of this truth, we do not know that we could do better than point to the recent and independent contributions of Professors Böllinger and Friedberger on the subject of colic in the horse.

By the merest accident we lately stumbled upon the brochure by Friedberger; the foreign booksellers (who usually send the writer all works on parasites) not supposing for a moment that colic in the horse could have anything to do with worms. It is to be feared that some members of the profession entertain a similar opinion; but we are open to correction.

Professor Friedberger commences his course of lectures by reminding the students of two years' standing at the Munich veterinary school that amongst the patients usually admitted to the institution a very large proportion are received as cases of colic; and he makes this fact for himself a prime ground of personal responsibility, in view of giving the pupils the most recent opinions that are to be obtained on the subject. "When you take into consideration," says Friedberger to his pupils, "that, according to the statistical evidence set forth in the annual report of our institution for the last 13 years, that out of 4466 horses treated for in-

ternal disease, the treatment for 1961 of them was for colic and intestinal inflammation, or 44 per cent., and that in ten years 218 out of 391 horses died from internal disease, or 56 per cent. (colic and inflammation of the bowels being proved to be the cause of death), then you will see the need there is of my making you acquainted with this complaint, and of enabling you to form accurate diagnoses for yourselves."

The writer has purposely abridged the latter part of the paragraph, but he cannot quit it without remarking upon the evident conscientiousness of the Munich professor in reference to his clinical duties. This is the way to raise the tone of our pupils, who by their questions too often show that they have actually been educated into the notion that there is no necessity for them to look so carefully and scientifically into the causation of disease. It is a cheering fact, however, that the number of students who are thus minded diminishes year by year; and even those who deliberately prefer to remain in "horsey ignorance" are not primarily to blame for assuming such a retrogressive attitude.

Professor Friedberger next goes on to state that the facts obtained at the Munich institution are in entire harmony with the data supplied by other Continental veterinary schools, at the same time particularly referring to Böllinger's statistics which we shall record at full length further on. He also fortifies his position by pointing to the experiences of horsebreakers and veterinarians in private practice; whose testimony alike goes to prove "that colic is not only the most frequent, but also the most dangerous of all the diseases to which the horse is subject." Quoting from Von Niemeyer (the English edition of whose text-book on practical medicine is well known to physicians in this country) he says, "By the term colic in the restricted sense we understand in human medical science pain in the bowels, or enteralgia. This is a nervous sensibility in the region of the *plexus mesentericus*, which, as such, is not frequently observed. In the widest acceptation of the term *colic* we comprehend all painful affections of the intestines apart from this neurosis that are not consequent upon inflammation or textural disease of the walls of the intestines" (*s.* 2). In the veterinary art, says Friedberger, we are very far removed from the power of making such such subtile distinctions as are accomplished in human practice. It is not possible for us to circumscribe the meaning of the word colic in the way here pointed out. The indications of colic in our horses (he adds) such as ordinarily come under our observation, are commonly nothing more than varying degrees of restlessness,

brought on by pains in the bowels. We cannot even tell what section of the intestinal canal is the seat of the disorder Consequently, we cannot draw any immediate conclusions as to the nature, intensity, and extent of the pathological processes going on. Having next remarked that a legion of morbid conditions (ein ganzes Heer von Krankheitszuständen) form the basis of colic, Friedberger adopts the method of Professor Röll in classifying them as follows:

I. *True colic*, proceeding from the intestinal canal.

II. *False colic*, arising from a diseased state of other abdominal organs. In this category especially are affections of the bladder and sexual organs, which in the first instance produce similar external evidences of suffering.

The first group of diseased conditions is then subdivided in the following manner:

A.—*Essential*, to which may be referred the under-mentioned causes.

1. Colics without material cause, as the so-called nervous cramp (or rheumatic colic).
2. Colics consequent upon anomalies of the intestinal contents, such as—
   - *a*. The colic produced by over-feeding.
   - *b*. The colic brought on by flatulence (wind-kolik).
   - *c*. The colic occasioned by stoppages in the intestinal canal. These obstructions may arise from fæcal accumulations, stones, concretions, &c.

B.—*Symptomatic*, such as—

- *a*. The colic produced by worms.
- *b*. The colic resulting from poisons.
- *c*. Colics brought on by structural diseases and changes in the relative position of the intestines; colic occasioned by acute catarrh and croup affecting the delicate mucous membrane of the bowel; colic from follicular inflammation and atrophy of the mucous membrane of the colon; colic from carbuncular formations on the mucous membrane; colic from dysentery and from the so-called internal cramp; colic from rupture and intussusception; colic from wounds of the stomach and entrails; and colic from spontaneous laceration or perforation of those organs.

d. Colic resulting from morbid conditions of the lining membrane of the abdomen and intestines (peritoneum).

Having offered this very exhaustive epitome of the ætiology of the disease, Friedberger then seeks to impress upon his hearers the necessity of regarding the term *colic* as expressing nothing more than a symptomatic pain. It is in no sense a peculiar disease.

T. S. C.

(*To be continued.*)

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Extracts from British and Foreign Journals.

PELLIZZARI, TOMMASI, PERRONCITO, COBBOLD, LEWIS AND GIACOMINI, ON CYSTICERCI.

Great activity has of late been shown by members of the profession in Italy in reference to parasites, and especially to such of them as are in any way concerned with sanitary matters. Thus, Professor G. Pellizzari recently communicated to the Medico-Physical Academy, at Florence, the results of a series of experiments conducted by himself, with the assistance of Dr. Tommasi, in regard to the temperature necessary for the destruction of cysticerci in measled meat. An account of these experiments is appended to Dr. Tommasi's edition of Dr. Cobbold's *Manual of the Internal Parasites of Animals*.* They were made in view of certain sanitary measures proposed to, and effected by, the Municipal Commission of Florence, the object being to prevent the distribution of measly meat generally, and especially that of swine. Signor Bosi, the superintendent of the public slaughterhouses, granted every facility in his power. According to a previously published memoir by Professor E. Perroncito, it was stated by him that measly meat (*panicatura degli animali*) required a higher temperature than that of boiling-point for the destruction of the bladder-worms in question. In this opinion Signor Bosi shared. According to the original memoir of Perroncito, the title of which is not supplied by Dr.

* 'Appendice. Parasiti interni degli Animali Domestici.' Trad. dall' Inglese ed Annotato col permesso dell' Autore, dal Dott. Tommaso Tommasi. Firenze, &c. 1874.

Tommasi, we are told that "about twenty specimens of cysticerci were collected by the author, and placed in boiling water. After twenty minutes' boiling, not one of the parasites appeared to suffer. The head continued to be drawn into the body, and when the cysticerci had their heads drawn out one by one, they still appeared to possess all the elasticity of living bladder-worms, displaying those movements of extension which are proper to parasites not yet dead. The hooks were observed regularly disposed on the proboscis, where they formed a double crown, the suckers remaining intact." Perroncito remarked, however, that the cysticerci showed a colouring tendency towards brown, and ingenuously added that "with the aid of two needles it became easy to lacerate the body of the cysticercus, which appeared to be swollen, and possessed of diminished cohesion of its parts." It was evident to all eyes, remarked Professor Pellizzari, that these statements involved clear contradictions. Yet again, at page 28 of the memoir, as quoted by Tommasi, Prof. Perroncito says, "During the past winter I introduced some little slices (*fettuccie*) of muscle-flesh (8 to 10 milimètres in thickness), infested with cysticerci into a vessel (*cassolina*) containing fat at the temperature of 190 to 200° Cent. (374 to 400° Fahr.). At the expiration of ten or fifteen minutes the slices of meat were fried, and the cysticerci lying at the surface had acquired a light brownish colour, as if they were toasted. By breaking up the slices one could still see the small reddish muscular bundles, whilst the cysticerci in the middle remained entire and well preserved. Their heads displayed the hooks and suckers regularly distributed." It is certainly singular, as Pellizzari observes, that these cysticerci, having been thoroughly fried and roasted, should still remain alive and in their normal state; but the ultimate conclusion at which Perroncito arrives is still more startling, and one which, if it were true, would not fail to create a considerable stir amongst our officers of health. On reviewing the whole matter he says, "It appears to me that the melted fat alone of hogs (*maiali grandinosi*) should be utilised, and I am pleased to reckon the illustrious Gerlach and all other distinguished practitioners to be of the same opinion. Permit me, therefore, being well satisfied also with the results of many other experiments, once more to advance the conclusion that, if it is not certain that the cysticerci die at from 80 to 100° Centigrade (176 to 212° Fahr.), we are quite sure that they dry up and become completely mummified at 125, 130, and 150° Cent. (257, 268, and 302° Fahr.), temperatures which

we could easily produce by means of a properly constructed apparatus."

After remarking upon the serious nature of the conclusion which Perroncito seeks to establish, Professor Pellizzari makes further use of quotations which bear upon the question as to whether the quality of the vessels in which the fat of diseased hogs is melted down may not largely affect the degree of high temperature sought to be obtained (in view of a perfect destruction of the cysticerci). Perroncito repeatedly witnessed the operations of pork-butchers; and when portions of meat were introduced, with water, into the cauldrons, he always saw that the temperature "was maintained between 97° and 98° Centigrade." However, this part of the question may be dismissed in a very few words, since Perroncito himself finally allows that "the different composition of the vessels cannot elevate the temperature of the fat by many degrees."

With the praiseworthy intention of either verifying or refuting these conclusions, Pellizzari, with the approval of Bosi and with the assistance of Tommasi, instituted a fresh series of experiments at a private laboratory (*Gabinetto d'Anatomia Patologica*). The details of these experiments are exceedingly interesting; but as the record of them occupy several pages of the appendix already referred to, we must content ourselves with a general statement of the results obtained. To be brief, Professor Pellizzari found that cysticerci, so far from requiring a temperature of upwards of 100° Cent. for their destruction, die at a temperature of 60° Centigrade (140° Fahr.). He had, it appears, previously taken the initiative in recommending certain measures to the Florentine municipality, in view of protecting the public health, and he had now the satisfaction of more than confirming the wisdom of these sanitary precautions. The precise nature of these measures of prevention are then stated at some length. In excessively measled animals, the fat is removed and boiled in suitable cauldrons, and has potash mixed with it to render it useful for industrial purposes. By these various measures the entire animal is utilised, and with such precautions there seems very little chance for the measles of the hog to arrive at the tænioid or sexually mature condition.

In the next part of his communication Pellizzari touches upon the question of measles in beef, referring especially to the experimental labours of Leuckart and Cobbold. Quoting from the Italian edition of the *Manual of the Parasites of Domestic Animals*, by the last-named authority, he

finds additional support to the view already advocated and thus is led to pronounce upon the propositions of Dr. Perroncito as of no value whatever. "But how is it," he adds, "that notwithstanding that so low a temperature suffices to kill these cysticerci, yet cases of tænia are continually occurring?" The answer to this question will appear in the sequel.

Before proceeding to give a definite answer to Pellizzari's question respecting the causes of the frequency of tapeworm in Italy, it may be as well to refer to the recent *brochure* by Dr. Giacomini.* This author appears to have had no opportunity of perusing Pellizzari's communication already cited, and consequently it is not surprising that he should, in common with others, have accepted the conclusions of Perroncito. The respective contributions of these authors were probably made public about the same date. Be that as it may, Giacomini clearly perceives that, whatever precautions of a hygienic character are suitable for the prevention of disease arising out of the consumption of measly pork, the same, or at all evènts similar, measures ought to be adopted with the view of checking tapeworm affections arising from the ingestion of other kinds of meat, especially veal and beef. Like Pellizzari, he is satisfied as to the human origin of the small bladder-worms found in cattle, and establishes this position not only from the oft-quoted experiments of Leuckart and Mosler, but also from those conducted by Cobbold and Simonds in England, and by Professor F. Saint-Cyr in France. From a careful review and consideration of all the facts of the case, he recommends a more complete supervision (*una sorveglianza maggiore*) over the flesh of oxen before it is employed commercially, and greater precaution when employing veal as food, by causing it to be subjected to a high temperature, in order that the parasites may be killed before it is ingested. It is evident that Giacomini thinks that a temperature exceeding that of boiling-point is necessary for the destruction of the beef and veal measles, since he immediately adds, "Though experiments have not been made with the object of ascertaining the amount of resistance of heat which the unarmed cysticercus can bear, yet, judging by those conducted by Professor Perroncito on the measle of the hog, we are in a position to say that a temperature of 135° Cent. (275° Fahr.) is necessary for the destruction of an isolated cysticercus,

* 'Sul *Cysticercus cellulosæ hominis* e sulla *Tænia mediocanellata*, contributo allo studio dei Cestoidi Parassiti dell' Uomo; del Dott. Carlo Giacomini.' 1874.

whilst the heat should be raised from 150° to 200° Cent. (302° to 392° Fahr.) for ten or fifteen minutes, in order to ensure the complete destruction of the cysticerci encapsuled in the interior of a piece of meat." We have freely translated and abridged this portion of Giacomini's text, because his statements are pretty much the same as those we have already quoted from Perroncito, as cited by Tommasi. But, in the next place, Dr. Giacomini must permit us to say that he is in error, quite unintentionally no doubt, when he states that experiments have not been performed on the cysticerci of the ox. So far from this being the case, our Italian friends must be told that, valuable as are the results they have obtained in this connection, similar experiments on temperature were long previously conducted by our countryman, Dr. Lewis; and these researches had quite as much to do with the measles or cysticerci of beef as they had with those of the hog, if not more. Naturally, but few foreign investigators can have had access to the work in which Lewis's experiments were originally recorded, and to which, therefore, we are in duty bound to call their attention.* Thus, also, Tommasi, whose excellent translation of Cobbold's *Manual* does him much credit, has fallen into the error of supposing that the investigations of Lewis were made in England; although, from the text of some portions of his own edition of that work, it might have been inferred that the researches were made in India. It is of very little moment where the experiments were carried on, but Tommasi's statement (appendix, *loc. cit.*, p. 161), wherein he says that Pellizzari's experiments, in which he himself took part (*ai quali io stesso ho assistito*), are even more complete than those made in England by Dr. Lewis, and in Germany by Dr. Küchenmeister, cannot be allowed to pass unchallenged. If Tommasi had enjoyed the opportunity of consulting Lewis's original memoir, we feel sure, from his evident candour, that he would not in any measure have under-estimated the extent of our countryman's labours. The memoir by Lewis is singularly complete, also of great length, and well-nigh exhausts all the facts that can have any interest in relation to the question of public health as affected by parasitically diseased meats, especially those of beef and pork. Towards the close of his essay he expressly states, as the result of investigation, " (1) That exposure to a temperature of 120° Fahr. for five minutes will not destroy life in cysti-

* 'A Report on the Bladder-Worms found in Beef and Pork,' by T. R. Lewis, M.B. [Being Appendix B, in the 'Eighth Annual Report of the Sanitary Commissioner with the Government of India.'] Calcutta, 1872.

cerci, but that they may continue to manifest indications of life for at least two or three days after such exposure; (2) That exposure to a temperature of 125° Fahr. for five minutes does not kill them; but (3) after being subjected to a temperature of 130° Fahr. for five minutes, they may be considered to have perished. After exposure to this and higher temperatures, in no instance have I been able (he adds) to satisfy myself that the slightest movements took place in their substance when examined even under a high power. At least, it may be confidently asserted that, after exposure for five minutes to a temperature of 135° to 140° Fahr., life in these parasites may be considered as absolutely extinct" (p. 139). Thus, we find the explicit statements of Lewis and Pellizzari in perfect accord; and seeing that their conclusions are alike the result of very careful and independent inquiry, conducted, moreover, with equal skill, it only remains for us, so far as this particular phase of the subject is concerned, to say that the question at issue is finally solved. These investigations make it perfectly clear that cysticerci of all kinds, whether found in veal, beef, or pork, cannot retain their vitality when exposed to a temperature of 60° Centigrade, or, in other words, 140° Fahr.

Having disposed of the prime question relating to the sanitary importance of the study of the cysticerci, it yet remains for us to refer to other points of scarcely less practical significance. In the first place, there is the subsidiary question raised by Perroncito as to the causes still operating to render tapeworms almost endemically prevalent in certain countries, even in those where so many admirable hygienic measures are known to be in full operation. Again, however, we must so far trespass on our reader's patience as to defer our remarks on this head to a future number, at the same time adding that many other interesting particulars, more or less intimately associated with the life-history and distribution of the cysticerci, yet remain to be discussed.

Having demonstrated the fallacy of the propositions advanced by Perroncito in regard to the actual amount of heat necessary for the destruction of cysticerci, Pellizzari next attacks the question as to the cause of the prevalence of tapeworm. In this view he first adduces some interesting data that had been previously communicated to the Medico-Physical Academy of Florence by Professor Marchi. On the occasion referred to, Marchi had stated that out of thirty-five tænia which he had examined, only one belonged to the species known as tænia solium; all the other thirty-

four being of the unarmed type, or tænia mediocanellata. Reflecting on this very striking fact, and also on the circumstance that he had in vain begged his colleagues to send him specimens of tænia solium, Marchi seems to have missed the very palpable explanation of this otherwise strange phenomenon. "How does it happen," exclaimed Marchi, "that, notwithstanding the occurrence of 13,000 kilogrammes of the flesh of measled hogs in the public butcheries, I have seen but one specimen of tænia solium, whilst thirty-four cannot have originated from the pig?" "The wherefore is obvious enough," replies Pellizzari; "because our hygienic regulations demand that the flesh of the hogs be raised to a temperature of 60° Cent. (140° Fahr.);" and he then himself immediately proceeds to ask another question, namely, as to how it happens that the tænia solium is so frequently seen in other places. To his own question, Pellizzari responds by remarking (1) that there are not so many precautions (of a sanitary kind) taken in other places, and (2) that the people elsewhere consume more slightly salted or uncooked meat, as sausages and so forth (*come salame giovane, saliccia e via dicendo*). Pellizzari, having explained that Marchi's thirty-four tapeworms must all have arisen from the consumption of the cysticercus of the ox, then goes on to speak of the prevalence of tapeworm in Florence, even in little children. This last-named feature, he says, is due to the circumstance that raw meat is frequently employed as a restorative (*come cura ricostituente*). "Thirty years ago," remarks Professor Pellizzari, "it was just as difficult to find a single tænia mediocanellata as it is now easy to find a great number of these worms; and all because it is nowadays customary to eat the flesh of the ox, either insufficiently cooked or raw. This absolute inversion of the facts of the case affords proof of the correctness of the position sustained by me, to the effect that the cooking of meat up to the degree of temperature necessary for ebullition ensures the destruction of the cysticerci." Notwithstanding this statement of his own, Pellizzari thinks that the interference of inspectors may be pushed too far, and thus serve to bring about the very disasters which it should be their supreme object to prevent. Thus, he argues against the suggestions of those who would entirely prevent the sale of measly meat, and who would only permit, as obtains in the province of Modena, the melting down of the fat of hogs. Very strict measures of this sort would, as he says, constitute a radical means of entirely stamping out tænia, but he also very judiciously reminds the sanitarian (*igienista*) that "such a step would be a serious thing for the trades-

man, bringing injury not only to the municipal administration, but also proving an encouragement to smuggling. In this way the public health would sustain worse injury by the inducement held out to the owners of infected animals to slaughter them in secret butcheries, thus little by little withdrawing the meat from the superintendence of the public officials. By the adoption of fraudulent measures there would be a daily consumption of diseased meat; and thus also, while the public administration would suffer loss, the public health, on the other hand, would gain nothing." In effect, Pellizzari says, if we advise the employment of more severe and radical measures than those already in vogue in Florence, we should overburden the tradesman, almost compel him to defraud the exchequer by smuggling, and greatly injure the public health.

The facts and explanations advanced by Italian writers regarding the causes of the endemic prevalence of tapeworm, are in perfect harmony with those we had earlier obtained from other sources. Respecting these causes much has been written that need not be repeated, but some of the facts recently brought forward by Cobbold in his manual of the internal parasites of our domesticated animals are both new and interesting. The eighth annual report of the sanitary commissioner of the Government of India had already made us acquainted with the fact that during the year 1869, out of 13,818 head of cattle slaughtered in the stations of the Upper Punjab, 768 beasts were found to be infected with measle-cysts. This, as Cobbold remarks (Tommasi's edit., p. 54) "affords a rate of 5·55 per cent., being a considerable diminution of the proportion observed in 1868, when the percentage gave a total of 6·12. The reduction was, without doubt, due to the vigilance and enlightenment of the army meat inspectors. The prevalence, however, of tapeworm does not bear relation to the number of animals infested with cysticerci so much as to the actual number of cysticerci developed in infected animals. Cobbold has frequently pointed out the inadvisability of condemning and burying the carcases of measly oxen, whether there be few or many cysticerci present, and he has stated, on trustworthy evidence, that even the presence of a few cysticerci is deemed by some inspectors a sufficient reason for rejecting the entire animal. Such a waste should never be allowed. In regard to the numbers of ox-measles present in particular instances, Cobbold also adduces some remarkable facts privately communicated to him by Dr. Joseph Fleming, of the Indian Army Medical Staff. "None of our

experimental animals," he says, "though fed with scores of ripe proglottides, yielded such an abundance of cysticerci as Dr. Fleming encountered in the Punjab cattle. In one pound weight of the psoas muscles he counted no less than 300 cysticerci." From this it follows that the flesh of any one largely infested animal is capable, under the favouring circumstances of ration distribution and imperfect cooking, of giving rise to the formation of numerous tapeworms. Some people, including not a few of the profession, make light of the occurrence of tapeworm, and we have seen patients who have been told that the presence of the worms was of little consequence to them. For this wide-spread error there is some basis in the fact that by far the majority of infested persons suffer only the trifling inconvenience arising from the passage *per anum* of the proglottides; moreover, the less civilised the tapeworm-bearers happen to be, the less are they likely to suffer. The often-quoted experience of Kaschin, as related by Leuckart, where 500 hospital patients, in the Baikal district, had tapeworm, although all were being treated for other disorders, affords another argument tending to produce the same conclusion. On the other hand, amongst Europeans a small percentage of patients thus infested suffer severely. But without trenching upon the symptomatology and prognosis of tapeworm disease, we may further observe that Cobbold has summarised the whole facts of cysticercal prevalence within the compass of two brief propositions. "The prevalence or the rarity of cysticerci in cattle in any given country must be determined primarily by the habits of the people; for since the beef-measle can only result from the ingestion by the ox of the eggs of the tænia mediocanellata, it is clear that the degree of infection of cattle will correspond with the facilities offered for egg-dispersion. In like manner, it may also be affirmed that the frequency of this particular species of tapeworm amongst the people occupying any given area will bear a strict relation to the amount of underdone measly beef consumed by the inhabitants" (Tommasi, *loc. cit.*, p. 48; *Manual*, p. 37). But another question, and one of great interest to sanitary science, is that which Cobbold has raised in reference to the period that nature requires for the destruction of the cysticerci, or, in other words, for the performance of a natural cure by calcareous degeneration of the parasites. He has shown that all kinds of tapeworm larvæ (measles, bladder-worms, cœnuri, and so forth) have a natural life-epoch assigned to them, and in one of his experiments on a Dutch heifer or young cow he demon-

strated that a period of ten months was more than sufficient to insure the perfect destruction of the cysticerci of cattle, Moreover, this law or process of natural cure is not limited to cestode parasites, but affects all other kinds of internal parasites in one or other of their juvenile stages of growth. In the flesh of his experimental animal Cobbold estimated that there were not less than 12,000 of these degenerated cysticerci. This positive contribution to our knowledge of the limits assigned by nature to the epoch of larval activity is not merely of abstract scientific interest, but it has important practical bearings, inasmuch as it points out in what way an entire herd of cattle (known to be measled by the *post-mortem* examination of one animal previously selected for the purpose, or for that matter, if preferred, by the rather barbarous act of excising and examining a fragment of the muscle of a living one) may be freed of its parasitic guests; and it also shows how all risk of propagating tapeworm (without incurring the careful process of raising dead flesh up to a certain temperature) may be effectually prevented. The stockowner has but to remove his animals for six or eight months to localities where no fresh infection can occur, when at the expiration of the time mentioned all those cysticerci that did exist in the beasts at the time of the transfer will have perished. The flesh of the animals may then be eaten with impunity, whether well cooked or raw. This is an important teaching deducible from experimental inquiry, and we are rather surprised that it has hitherto escaped the notice of persons who, though they affect to ignore the value of scientific researches, are particularly anxious to parade their practical knowledge, which, unhappily, too often proves a mere cloak for ignorance.

In conclusion, we have only sufficient space left to revert once more to the *brochure* by Giacomini. It affords many interesting details respecting a case in which there was a most unusual degree of infection of the human body by cysticerci. Dr. Giacomini institutes a searching comparison between the human measles procured by himself and those of the pig sent to him by Professor Perroncito (*loc. cit.*, p. 10). In the human cysticerci he noticed a greater adherence of the capsule to the enclosed measle, and also observed that while the human measle-heads always displayed 32, or in some few cases 34 hooks, in two differently sized circles of 15 or 16 each, the pig-measles, on the other hand, carried only 24 hooks to the double circle of equal circumference; consequently the hooks appeared to be more crowded

together in the human parasite. This fact, as Giacomini remarks, does not of itself constitute an essential specific difference, since variations of the kind not unfrequently occur in cysticerci occupying one and the same host or bearer.—*The London Medical Record.*

SERIOUS LOSS OF CATTLE FROM THE USE OF RAPE CAKE.

The following extract from a Lincolnshire newspaper refers to a matter of considerable importance to the agricultural community:

"Mr. Jos. Cunnington, farmer and distiller, Deeping St. James, has just lost eight cattle, two of which were valuable cows, from eating rape cake. He had used a ton of it as a trial a short time ago in conjunction with linseed cake, and on the strength of it he ordered five tons more. He had just stored it and on the morning of Thursday, the 3rd ult., he gave his whole herd, with the exception of two cows which were being fattened, an ordinary allowance of it, varying from three to six pounds each, according to age. In three hours after, the cows which had the largest share were observed to be ill, and in less than two hours more, all which had partaken of it (37 in number) were similarly affected. In eight hours from the time of its first being given, one of the cows died, and in five hours more eight of the herd succumbed to its effects. Mr. Gerrard, M.R.C.V.S., Market Deeping, was called in, and succeeded in saving the remainder, though five are still in a precarious state. In consequence of the serious nature of the case, Mr. Gerrard sent a telegram for Professor Simonds, Principal of the Royal Veterinary College, London, but he, with his staff, being engaged at the Smithfield Cattle Show, could not attend; but Professor Williams, Principal of the New Veterinary College, Edinburgh, came, and along with Mr. Gerrard, investigated the case, and both gentlemen were satisfied, from the *post-mortem* examination, that the cake is the sole cause of the disaster. Portions of the viscera and contents of the stomach and some of the cake have been forwarded to Professor Tuson, Royal Veterinary College, London, for analysis, and samples also of the cake to Dr. Voelcker, chemist to the Royal Agricultural Society. It may be mentioned that the two cows which were being fattened, and stood alongside the three dairy cows, and had nothing but linseed cake, have not shown the slightest signs of illness."

[We may add that Professor Tuson has two other cases

similar to the above also under investigation, and that we believe he has found the cake (rape) in each instance to be contaminated with mustard.—Eds.]

THE COMPOSITION OF THE BLOOD.

The *Journal des Débats* gives an interesting account of some researches carried on in the laboratory of M. Claude Bernard, by MM. Malassez et Picard, upon certain changes in the composition of the blood. It is generally known that the blood consists of an almost colourless fluid, in which a vast number of red bodies, or corpuscles, are suspended, these bodies being so minute that a microscope of considerable power is required in order to render them individually visible. When sufficiently magnified they are seen as flattened discs, each consisting of an enveloping cell membrane and its contents, and they are sufficiently tinted to confer, in the aggregate, its characteristic colour to the fluid of which they are an essential constituent. The corpuscles contain the iron which enters into the composition of healthy blood, and they have long been known to furnish the channel by which the oxygen of the air, received in the lungs, is conveyed to the most remote parts of the body, there to be the chief agent in the performance of many vital functions. The corpuscles vary in abundance in different people, and in the same person at different times; and these variations, when considerable, declare themselves by the production of pallor or ruddiness. Until recently, however, there has been no means of discovering variations smaller in degree, but which, nevertheless, may have important practical bearings upon the preservation of health. M. Malassez, in 1872, described a convenient and accurate method of estimating the number of red corpuscles in a cubic millimètre of blood, and hence, necessarily, of ascertaining facts with regard to their increase or decrease. He introduced a small quantity of blood into a flattened and graduated glass capillary tube, and then, by counting under the microscope the number of corpuscles found between two divisions, was able at once to calculate the number in a cubic millimètre. In this way he tested upon himself and others the differences of corpuscular abundance under different circumstances, such as after repose and after exercise, and after living in town and in country air. He found that exercise, producing perspiration, was always followed by a marked increase in the number; but he omitted

to weigh the body at the same time that he took the drops of blood, and hence has left it an open question whether the increase is not apparent only, the result of a diminution of the fluid elements. His experiments before and after the use of simple and medicated baths are open to the same objection, which does not seem, however, to apply to those intended to illustrate the differences in the action of town and country air. The increase in the number of corpuscles in the country or at the seaside was large and invariable, and amounted in an average taken from five persons to no less than one sixth of the whole; while it is also found that the quantity is greater by one eighth in winter than in summer. M. Malassez hopes that his method of investigation will prove, on more extended trial, to be of practical use to physicians in determining the progress and tendencies of disease; and that both the temporary and the permanent variation in the proportion of corpuscles to fluid may possess an important significance which has yet to be rendered clear. The researches of M. Picard have had reference to the quantity of iron contained in the blood; and he has shown that this quantity may, under some circumstances, be twice as large as under others, and also that the proportion of iron bears a definite relation to the respiratory power of the blood—that is, to its power of absorbing atmospheric oxygen. One hundred cubic centimètres of blood, which contain 0·092 of iron, will absorb 0·0397 of oxygen; but the same quantity, when containing only 0·048 of iron, will absorb only 0·0213 of oxygen. The proportion between the two is always the same, and the blood will take up oxygen to a little less than half the weight of its contained iron. M. Picard has also found that the spleen contains a proportion of iron four times greater than that of the blood itself, and that, unlike other glands, its size and fulness of blood diminish during its period of activity, the blood itself becoming richer in globules and in iron during the same period. MM. Malassez and Picard have not yet stated their own interpretation of their observations, but M. de Parville, in the *Journal des Débats*, endeavours to connect some of the alterations in the blood with barometric changes, and expresses a hope that these alterations, and the light possibly thrown upon the functions of the spleen, will clear up the nature of many obscure phenomena. He refers especially to a form of splenic disease which is largely fatal to sheep and cattle, but which M. de Launay has succeeded in banishing from his farm at Courcelles by giving the animals free access to carbonate of lime. M. de Launay had observed that the beasts stabled next to the walls of the sheds were in

the habit of licking the whitewash, and that they did not suffer. He placed chalk in a position accessible to the rest, and obtained for them a similar immunity. He then isolated certain sheep from the rest, deprived them of chalk, and found that they were attacked by splenic disease as formerly. Experiments of this kind have been repeated by other flock-masters, and the results obtained by M. de Launay have been confirmed. If this be so, the researches of M. Picard into the functions of the spleen will come too late to furnish the cure for the malady in question; but, the cure having been furnished, the researches may perhaps enable us to understand the mode of its operation.

THE USE OF SALT FOR THE FEEDING OF CATTLE.

(Translated from the French of 'Le Journal d'Agriculture Pratique,' expressly for the 'Mark Lane Express.')

Much has been written on this subject and much advice given, without having, in my opinion, resolved the question in a practical point of view. First: I cannot admit that we can determine a ration, a certain quantity of salt to be given each day, or at each repast, to an animal of such or such a breed, because it is evident that that ration ought to vary in accordance with a number of circumstances. For example, the size of the animal, its age, its condition of leanness or fatness, of health or disease, the medium on which it lives, the season in which we find it—warm and dry, or cold and moist—the tonic or debilitating nature of the food it receives, &c. &c. Experience has proved, and many farmers have acknowledged, that to *enforce* salt upon animals is to commit a fault of which we have often reason to regret the effects. In our establishment, without reckoning milch cows and young stock, we keep eighteen or twenty draught oxen, accustomed in all seasons to rough work, and who receive of necessity an abundance of food, sufficient to repair the force expended, and which, after a time, are rapidly fattened. These animals, I may say, experience afterwards those gastric disorders so common amongst oxen which we harness almost immediately they have finished their meal, and whose rumination ought to be going on at the same time they are making the necessary efforts for the accomplishment of their work, a condition which we know is most unfavorable to the functions of digestion. It is necessary, therefore, to introduce in the feeding of our cattle a condi-

ment favorable to their digestion without exposing them to the more injurious effect (which is not generally believed) of the immoderate use of salt in giving it under improper conditions. In the distribution of salt we leave the cattle to themselves and their own judgment as to quantity, and they have never deceived us.

We simply place in the manger and at the door of each of them a lump of rock salt, which contains, mixed with common kitchen salt, in suitable proportions, sulphate of soda (Glauber's salt) and sulphate of magnesia (Epsom salt), substances digestive and slightly laxative, and very favorable to the functions of the stomach, and very important for ruminants. When an animal feels the effects of indigestion painful *he licks at discretion* his morsel of salt, and recurs to this means of relief every time he feels the need of it. I have very often seen animals whose digestion operated painfully rise, lick the salt for a time, longer or shorter, according to the need they feel, and, surely guided by their instinct, then lie down, and again rise, lick the salt again, and so continue till the rumination takes place again, and thus administer themselves the remedy for the disorder.

The good effects of this mode of distributing salt to animals have been proved to us many years ago in a manner which has led us to attach still more importance to it. In consequence of the inundation of the mines whence the salt is procured that we make use of, they have been deprived of it for some time; and every week we have had to treat some of them for disordered digestions, of which the least consequences were the loss of labour of the oxen, of milk of the cows, and their falling away in condition. But as soon as we have been enabled to give them this condiment the indigestion has been removed. In the absence of rock salt we could always incorporate with the rock salt employed sulphate of soda crystallized (Glauber's salt), which is sold at a low price, and which all salts contain in the proportion of from 3 to 4 per cent. We consider it to be the best reactive, and perhaps the only one against the inconveniences of an excessive consumption of salt.

The farmers act upon routine (I hope they will excuse me for speaking the truth), and because they profit largely from the advantages it presents it is necessary that the administration of the indirect contributions should facilitate the means of application, by authorising in all the communes depôts of salt for the use of cattle, in order that the cultivator may be able to procure it as readily, without loss of time and in proportion with his wants and resources, as

that destined for his own consumption, and in order that there will soon be in France not a single head of cattle deprived of salt; then we shall no longer in this respect have to envy other countries in which the beauty of the farm animals is almost always in proportion to the low price of salt.

The salt merchants might deliver this salt in agglomerated pieces of eight or ten kilogrammes, which may be placed, as we have already said, in the mangers in front of each animal. We shall thus be certain of never giving salt in excess, whilst the animal could always satisfy the want it feels of consuming it.

The employment of salt in cattle feeding, when even it is subject to the duty, and still more when that is remitted, does not involve an expense without compensation; for by its action upon the digestive organs it produces a better and stronger assimilation of the food, and consequently a saving, the nutrition being not in proportion with the quantity consumed, but rather of that digested; a part also is found in the dung, which will acquire an extra value by it; the milk also being of a better quality, and it imparts to the butcher's meat a very appreciable flavour. That of sheep said to be *pre-salted* has no other cause.

From the preceding remarks it must not be concluded that I advise the absolute exclusion of the addition of salt from boiled food, from which it develops the aroma, nor its mixture with forages too watery, damaged, or ripened and then harvested in a moist time and state, and to which it is required to restore what the water has carried off. But in the two cases salt must be employed with moderation, in order that the animals may not be compelled to consume it when they do not require it.

In a few words, *do not force* the salt upon the cattle, but *place it within their reach;* they will then consume it in quantities varying with their real wants, which their instincts will teach them to know much better than we can, and they will never abuse it.

If I insist upon this point, it is because I have seen stables decimated by diseases occasioned by the immoderate use of salt, of which the abuse, like that of the best things, produces results contrary to those of a normal consumption and based upon requirements. And in proceeding as I have advised you will receive the profit by all the good effects of salt without having to regret the inconveniences of it.—*The Mark Lane Express and Agricultural Journal.*

THE TRANSMISSIBILITY OF TUBERCULOSIS.

By George Fleming, M.R.C.V.S., Royal Engineers.

(*Continued from* vol. xlvii, p. 925.)

On different occasions owners had informed Grad that they had lost two, three, and four animals *in the same stall* from consumption — marasmus accompanied by cough. At first he did not attach any importance to these declarations, either because he thought the mortality occurring in this way was merely accidental, or was due to hereditariness, which he acknowledges plays such an important part in the production of the malady. However, one day, when visiting the stables of an extensive farmer at Leinheim, he was informed that every year for five years one of the cattle had died from phthisis, "and what is very curious," said the farmer, "this always happens in the same stall." In proof of this, Grad was shown a young cow which, on examination, offered all the symptoms of tuberculosis: such as excessive emaciation, skin clinging closely to the bones, frequent and feeble cough, &c. Its value in this condition was from thirty to forty francs. According to the farmer, the animal had been ten months in the stall, and when first placed therein it was in flourishing health; it was the fifth cow that had fallen into the same state in this stall. Grad's attention could not but be strongly aroused by this report; nevertheless, he expressed his opinion that an hereditary tendency was doubtless the efficient cause in this succession of losses. Such, however, was not the opinion of the farmer, and it was at length agreed that Grad should choose a cow from another stable and put it in this stall, as an experiment. With this object a cow three years old and in calf was selected; it had every appearance of perfect health, had been bred on the farm, never been unwell, and never coughed, and none of its progenitors had been affected with tuberculosis. It was moved into the stall and remained quite well until after calving, when a short cough was the first symptom observed. This cough increased in frequency, and emaciation gradually set in, with the usual *cortége* of symptoms accompanying tuberculosis distinctly marked; so that in about twelve months the creature was only the shadow of its former self, and was sold for a trifle, like the others which had preceded it in the stall, to the low-class butchers. Grad could no longer resist the evidence in support of this cause, this being the sixth animal attacked with tuberculosis in the same stall; and he inferred that, in all probability, the disease had been transmitted by the ingestion of the matters expectorated by the cattle which had previously inhabited the same place. On

his recommendation, all the woodwork of the stall was removed, the manger and rack were thoroughly disinfected, and the spot left unoccupied for a certain time. Then the stall was rebuilt, and again occupied by several animals in succession; but tuberculosis made no more victims either in it, or the other parts of the stable. This observation was made fifteen years ago, and since then Grad's opinion as to the transmissibility of tuberculosis has, he asserts, been amply confirmed; and the examples he could adduce of the conveyance of the disease by inhabiting a *contaminated stall* are numerous, and as patent as that just related. For a number of years he has recommended that the places occupied by phthisical animals should be disinfected; and in no instance in which this was adopted had cases of transmission occurred, no matter how numerous they may have been previously. Grad also mentions that a number of people in his district believe in the possibility of transmission of tuberculosis by cohabitation, and he has no doubt that experience or observation has taught them this. He states that the observations he could report as to the transmissibility of tuberculosis by direct cohabitation—animals standing beside each other—are not so frequent or conclusive, because of the arrangement of the stalls, which completely separate the cattle towards the head; so that the expectorated matters stand but little chance of being ingested by those placed in the stalls adjoining a phthisical cow. In those sheds in which the cattle are not so kept apart cases of transmission have been noted, but the observations were not sufficiently rigorous to establish a certain conclusion upon. He adds, however, "In my opinion, this transmission is possible as soon as tuberculosis has set in at an advanced stage, and the expectorated matters are ingested by other cattle."

These observations as to the extension of tuberculosis in the bovine species are, as will be seen, so numerous and apparently so authentic and exact, as to be somewhat startling; but the results of experiments undertaken by various authorities with the view of ascertaining whether the disease could be produced by inoculation with, or the ingestion of, tuberculous matter, are yet more so. These experiments, it may be said, had no reference to the transmissibility of the malady by cohabitation; indeed, the experimenters, generally, do not appear to have had any idea that such a mode of infection was at all possible in the lower animals, nor yet even in man.

The first of these is Villemin, professor at the Val-de-Grâce Hospital, Paris. Having arrived at the conclusion, by a process of induction, that phthisis in mankind was the result of a specific or virulent agent introduced into the organism, he resorted to experimentation to confirm his views. The results of his expe-

riments were communicated to the Imperial Academy of Medicine in two memoirs, having for their title 'Cause et Nature de la Tuberculose,' the first of which was read on December 5th, 1865, and the second on October 30th, 1866.[1] These contained a fact of the highest interest: namely, the certain transmissibility of this affection by inoculation. The animals experimented upon were chiefly rabbits, and the material tubercle from the human lung. The number of animals inoculated was large, and tuberculosis, more or less extensively developed, constantly resulted. Guinea-pigs were also employed, and the inoculations were as successful as with the rabbits. No matter at what part of the body these inoculations were made, the tuberculisation that followed was marked by the same serious characters in all, many of the creatures dying after a variable period, and others, falling into a state of marasmus, were killed. The lesions noted in them were chiefly found in the lungs, which were more or less infiltrated with tubercles; but other organs and textures were not exempted, the spleen, liver, bronchial and mesenteric glands, &c., being also involved in many cases. Attempts were made to produce the malady in other animals than these rodents, small ruminants and carnivora, but the results were generally negative; though a lamb so inoculated was found, four months afterwards, to offer lesions of circumscribed pneumonia, with grey or transparent granulations scattered on the surface of the lungs, and cheesy deposits in the liver and some glands. Villemin was somewhat in doubt as to the nature of the granulations, and appears to have inclined to the belief that they may have been the result of inflammation caused by the presence of strongles in the bronchi. At any rate, inoculation with them did not produce tuberculosis in rabbits. Of four puppies inoculated with human tuberculous matter, one fell into a state of marasmus; but when killed at the end of three months the lungs, liver, spleen, and kidneys, were found to be very healthy. The fourth alone, which had been inoculated at three different times, and was killed at the termination of five months, offered, along with cretaceous granules, some transparent granulations, the nature of which was undecided. Three young cats were inoculated, and destroyed six weeks after inoculation; the first was healthy, the second only showed a few granules of a doubtful character on the surface of the lungs, and the third, which had been inoculated twice, had a small number of pulmonary granulations, which certainly appeared to be tuberculous in their character, as well as a caseous mass at the point where the inoculation was made.

After these experiments with human tubercle on the rabbit,

[1] These results were published in a collected form in a small pamphlet, 'Études sur la Tuberculose.' Paris, 1868.

guinea-pig, sheep, dog and cat, Villemin was desirous of discovering whether the tuberculous matter of animals, and especially that of the bovine species, could give rise to tuberculisation. He therefore inoculated a rabbit in the ordinary way with a portion of the cretaceous deposits found in a phthisical cow; the creature fell into an emaciated condition, and in six weeks was killed. Its lungs were found to be filled with a great number of tubercular masses, several of which had a cheesy aspect in the centre; the pleura, spleen, liver, kidneys, and mesenteric glands, also showed a certain number of these masses. From this experiment Villemin concluded that bovine phthisis is identical with that of man.

Finally, with a view to determine whether the artificial tuberculisation produced by inoculation possessed the power, like that which arises spontaneously, of being transmitted; or, in other words, whether its virulence was retained beyond the primary transmission, he inoculated two rabbits with the matter from one which had been rendered tuberculous. One of these, killed in about six weeks, had very small transparent tubercles in the lungs, spleen, follicles of the small intestine, and point of the cæcum; while those in the mesenteric glands were already undergoing softening. The other rabbit died at the end of the second month, and its lungs were completely infiltrated with tubercles in the form of confluent masses; while the pleura, liver, spleen, and kidneys, were studded with them. This second generation matter, inoculated in another rabbit, retained all its morbid activity, causing in six weeks intense tuberculisation of the lungs, with considerable engorgement of the bronchial and prepectoral glands.

The result of Villemin's researches was submitted to a committee of physicians and veterinary surgeons—members of the Imperial Academy of Medicine, who, in their report, while admitting certain of his conclusions to be exact, and of great, indeed of most urgent importance, nevertheless objected to others, chiefly from the different results their own experimental researches had in the meantime yielded. Indeed, a certain degree of hesitation, and even of unwillingness, appears to have been evinced then and for some time subsequently to accept what Villemin had no doubts whatever was substantially correct; and when his experiments were successfully repeated by others, it was sought to ascribe their success to anything rather than infection.

Numerous experimenters quickly entered the field to test the value of Villemin's opinions, and amongst these we find the names of Colin, Vulpian, Clark, Lebert, Cohnheim, Frankel, Empix, Wilson Fox, Sanderson, Waldenburg, Papillon, Nicol, Laveran, and others. The rabbit and guinea-pig were the animals chiefly operated upon; and though the experiments afforded gene-

rally the same results, yet, as has just been said, they were seldom ascribed to the cause insisted upon by Villemin. It was acknowledged that there was no difficulty in developing in rabbits and guinea-pigs a disease analogous to tuberculosis by inoculating them with tubercular products (grey granulations, caseous matter, and the sputa of phthisical subjects), but that the same effect might be induced by inoculation with non-tubercular pathological matters or the application of irritating setons; that, in fact, the introduction of matters which, acting chiefly as *mechanical irritants,* might give rise to appearances in every respect analogous to tuberculosis, and differing in no respect from that morbid condition. The results of these experiments, in fine, seemed to lead, according to the majority of the experimenters, to a directly opposite view to that entertained by Villemin with regard to the specific nature and virulence of this artificial tuberculosis; and it was sought to explain these results by stating that deposits of caseous matter were first created at the part where inoculation had been performed or the seton had been introduced, then in the neighbouring glands, and that it was the caseous matter thus formed which gave rise to deposition of tubercle in all the organs.

This explanation was certainly conformable in every respect to the theory of Niemeyer, with respect to the development of tuberculosis in man. According to this authority, nothing so much predisposes to tuberculosis as the presence of a caseous deposit in any part of the body (lungs, glands, articulations, bones, &c.); and if the lungs are so frequently tuberculous this is because in them, oftener than anywhere else, this caseous matter is formed. Bühl even went further than Niemeyer, for he pretended that tuberculosis was always due to infection of the blood by a cheesy deposit; but, as was pointed out by the latter, there are cases of acute tuberculosis in man in which, on a necroscopical examination, no trace of such a deposit can be discovered. Bühl's law was, however, generally accepted as exact, in so far as the artificial production of tuberculosis in animals is concerned.

The manner in which a caseous centre might become the cause of tuberculosis was thus explained by several experimenters:

Bühl admitted that there was blood-poisoning by the cheesy matter, and he included tuberculosis among the infectious maladies; Niemeyer and others believed in a gradual generalisation of tubercle through the medium of the lymphatics; while Lebert and Behier thought experimental tuberculosis was due to capillary embolism. Papillon, Nicol, and Laveran were of opinion that the caseous matter might be conveyed by the lymphatics, as in their experiments they always found the glands in the vicinity of the

inoculated part early undergoing the caseous transformation; though they were also inclined to think that certain elements of this matter might enter the circulation, and thus produce tubercles in the parenchyma of organs. These experimenters, it is worthy of note, never succeeded in tuberculising the serous membranes. Experiments conducted by Demet, Paraskeva, and Zallonis, in Syra, Greece, were not only successful in transmitting the disease to rabbits by inoculation with the sputa and blood from a man affected with phthisis, but they ventured upon the unprecedented experiment of inoculating a human patient whose history gave no indication of tuberculous taint, and whose lungs were perfectly healthy so far as a physical examination could discover, but who was suffering from gangrene of the big toe of the left foot, due to obliteration of the femoral artery. Amputation of the limb was proposed by the surgeon, but would not be submitted to; and as a fatal termination was inevitable, a quantity of sputa from a man who had abscesses in his lungs was inoculated in the upper part of the left thigh. About three weeks afterwards, auscultation revealed very slightly increased respiratory murmur at the summit of the right lung, and somewhat prolonged expiration in the subclavicular region. In thirty-eight days after inoculation the man died from gangrene, and on examination of the body it was found that the upper lobe of the right lung had seventeen tubercles in the first stage of development, two of which were the size of a lentil, the others being as large as a grain of mustard; they were of a grey colour and very hard. Two similar tubercles existed at the apex of the left lung. At the centre of the convex surface of the liver were two tubercles, one as large as a shelled pea, the other smaller, both being very hard and of a yellow colour. From this unusual experiment, it is evident that tubercle is inoculable in man himself, for it is scarcely possible that this patient, who was fifty-five years of age, could have had his organs infiltrated with as many as twenty tubercles in the first stage of development only; had they been naturally developed, they must have multiplied and passed through their regular evolution, especially in an individual predisposed to phthisis. Their limited number, stage, and size, offered a direct relation to the brief interval separating inoculation from the decease of the patient.

To the objections brought against his views, Villemin replied in an address delivered before the Imperial Academy of Medicine in August, 1868. In this he enters minutely into the special features of this induced tuberculosis in animals, and maintains that the tuberculous matter comports itself in this respect as a virulent element. The results of his experiments are given in detail in proof of this, and he strives to make it understood that the tuberculous matter deposited beneath the skin produces a

veritable contamination. It excites the formation of tubercles in the subcutaneous connective tissue, the walls of the lymphatic vessels and the glands, and, indeed, in the entire economy. But as the development of tubercles in the internal organs only appeared after the local phenomena, and not until after a certain number of days subsequent to the insertion of the matter, this period he compared to that of the incubation of virulent maladies. The question is also asked if this tuberculosis is not like syphilis, the local tubercle being, like the chancre, a primary phenomenon, and the source of ulterior accidents. To the facts and their interpretation offered by Villemin, those of an opposite tendency, which have been put forward, are reviewed by him. For instance, the development of a local lesion has been denied, and it has been pretended that the tuberculous mass found at the point of inoculation was the remains of the inoculated matter; that this matter, slowly passing through the lymphatics, did not reach the lungs until several weeks had elapsed; that it was an error to designate this interval that of incubation; and that the tubercles developed in the various organs were mainly constituted by the inoculated matter transported mechanically and in substance, the intensity of tuberculisation being proportionate to the quantity of matter deposited under the skin. Villemin combats these notions, and with much force. "When we deposit in a wound," he says, "a portion of tuberculous matter the size of a pin's head or even a hemp-seed, and at the end of two months we find it grown as large as a filbert, we evidently cannot regard it as the remains of that which has been deposited. And when we make a hypodermic injection of some drops of sputa diluted in water or defibrinated blood, and discover in the connective tissue where the injection has taken place tuberculous masses and granulations, we cannot admit that these are the *reliquats* of the inoculated substances. And must we believe that it takes this blood-serum and sputa twenty or thirty days to traverse the lymphatics? No; these liquids are absorbed almost immediately, and the tuberculous matter itself does not long remain in the wound, as on the following day it cannot be seen. The tubercles found at a later period in the connective tissue, the walls of the lymphatic vessels, and the glands, are the products of a new formation, and do not represent the inoculated matter, which they, in certain cases, exceed a hundred times in volume. And this applies with still stronger force to those of the internal organs, the abundance of the tubercles being such that certain viscera are scarcely anything more than a tuberculous mass."

Stating that from his studies he was led to consider tuberculosis a specific malady, and desirous of verifying the hypothesis with regard to its inoculability, Villemin then informs us that he

sought to realise, in principle, the conditions of a real inoculation: to wit, *a very small wound and an inconsiderable quantity of inoculable matter*. These conditions were never departed from, and all his inoculations were made with a portion of matter varying between the size of the head of a pin and that of a hempseed at most. And notwithstanding this constant uniformity in the procedure and the volume of the matter, tuberculisations extremely variable in their intensity and generalisation have been obtained; every degree had been observed, from a few scattered granulations to those startling generalisations in which nearly every organ was crammed with the proper pathological product of tuberculosis: a *manifest proof that the intensity of tuberculisation is completely independent of the quantity of matter inoculated*. The question of quantity only appeared to be invoked in blood inoculations, which, to succeed, demand a certain volume of that fluid.

With regard to the local tuberculisation, this is very often extremely insignificant; while the alteration in the lymphatic vessels and glands is far from being constant. In animals whose viscera were abundantly tuberculosed, the lymphatics have frequently been found unaltered, and the tuberculisation at the inoculated part quite rudimentary. Therefore, adds Villemin, *the number and extent of the internal lesions have no relation to the local lesions at the seat of puncture*. At the same time he remarks that the tuberculisation of the glands in the neighbourhood of the punctures need not be wondered at; for in animals, as well as in mankind, the disease has a manifest affinity for the lymphatic glandular system, and it has been often observed that the glands which could not be affected by the direct passage of the inoculated matter, such as the mesenteric glands, are perfectly tuberculous. The same happens with syphilitic and glander inoculations.

It has been attempted to explain the transmission of tubercle by a process of grafting; "but how can such a process explain the myriads of tubercular granules which stud the parenchymatous and serous organs?" asks Villemin. "Grafted tissues continue to live and develop at the places where they are deposited, but they are not reproduced elsewhere in the organism. The insertion of periosteum beneath the skin has never led to the production of bone in the lungs, kidneys, or periosteum. This theory, at the most, could only explain the development of tubercle at the seat of puncture; and even then the inoculated tuberculous matter, to do this, must be endowed with a very active vitality. But the softened matter in the centre of a tubercle does not even contain any distinct elements; we inoculate only with a *detritus*. How does it happen that the tubercle obtained from a body dead for thirty-six hours is susceptible of reviving and multiplying with

that activity which prevails in the tuberculous eruption? How can grafting explain the successful inoculation with sputa—*sputa which has been dried for twenty days,* as has occurred in our experiments? Does not all this prove that the inoculated matter acts by virtue of a principle independent of the histological elements entering into its composition?" And the histological appearances of inoculated and non-inoculated tubercle are absolutely the same; while an irrefutable proof of their identity lies in the fact, that inoculation with the tubercles produced experimentally reproduces tuberculosis as readily as if human tubercle had been employed.

The *quasi*-tubercles developed in man, and more particularly in animals, by different parasites, the lesions of which bear a close resemblance to those of tuberculosis, are then discussed; as well as the results of injection of dust, mercury, tallow, and irritant substances of various kinds, even pus, into the bronchia and veins; and the great differences between them and tuberculosis are explicitly shown. To confound the former with the latter would be as great an error as to identify the pustules produced by tartarised antimony with those of variola, or the rubefaction induced on the skin by a brush with the eruption of scarlatina.

It will be seen that Villemin's arguments are very telling and convincing with regard to the production of tuberculosis by inoculation. But they found a more extended application, and still stronger corroborative proof, in the experiments instituted by Chauveau, of the Lyons Veterinary School. That authority had been, for a number of years, carefully studying the intimate nature of the various contagia and their relations to virulent maladies, with a success which attracted much attention and afforded startling results; not the least of which was the discovery that certain of the contagia can infect as readily through the digestive organs as by any other channel. This had certainly been previously done, with regard to anthrax, by Renault, Davaine and others; while Renault had produced glanders in this way, and Roche-Lubin and Belliol, by causing sheep to swallow the crusts and matter from the pustules of those affected with variola, induced the disease in them; but Chauveau experimentally demonstrated on what conditions infection in this way depended—that they resided exclusively in the *virulent richness* of the matters submitted to the digestive action. With vaccinia, for instance, he affirms that it may be produced as certainly through the digestive tube as by the injection of the virus into the blood-vessels. In short, the result of his researches goes a long way to explain the oftentimes obscure transmission of zymotic diseases. Generalised syphilis, for instance, occurring without any initial accident, may be scientifically explained by the reception of the virus through

the digestive organs. His object in experimenting appears to have been to arrive at some conclusion with regard to this absorbent aptitude of the digestive organs, in order to decide as to the virulence of such and such a disease, the contagious properties of which might be undecided. Indeed, he appears to have considered the ingestion of virus into the digestive canal as an admirable criterion of this property—an infallible test when it is possible to give the suspectedly virulent matters in sufficient quantity to assure the penetration of the contagiferous elements. This criterion Chauveau sought to apply to the controverted question as to the virulence of tuberculosis; as the infection thus produced evades all the objections offered to the results of direct inoculation, as well as those of pulmonary infection in those diseases in which the lungs are chiefly affected.

Impressed with the idea that, if tuberculosis is a virulent malady, it should almost infallibly be communicated through the digestive canal, by reason of the exceptional facilities for administering in large quantities the matters containing the virus, he framed his experiments with a view to test this notion thoroughly. In the first place, he decided that his experiments should be made upon a species of animal in which tuberculosis was a natural and very common disease, endowed with all the seriousness and the characters it presents in the human species. With this object he selected the bovine species, as, in his opinion, this was the only way in which he could exactly appreciate the value of the results obtained, by comparing them with the characteristics of the natural or spontaneous malady. This choice, however, put him to the necessity of adopting special precautions to avoid experimenting upon animals already infected; and he was therefore compelled to resort to young creatures born and bred beyond all those influences or conditions which are supposed to favour the natural development of phthisis. As a further precaution, it was decided to place beside these one or more animals of the same species, as a means of check or control, and to afford the assurance that those experimented upon had not been exposed to any other cause capable of developing the disease after the ingestion of the reputedly virulent matters.

In 1868 four calves, aged from six to twelve months, were purchased from a locality where phthisis was unknown, and after purchase they were examined with the greatest care; but they were found to be in excellent health and remarkable condition for their age. On the day after their arrival, three received about thirty grammes of tuberculous matter obtained from an old phthisical cow in one of the Lyons slaughter-houses. The caseous, puriform, and cretaceous mass from the lungs was pounded in a mortar and dissolved in water, and then administered from a

bottle in small quantities at a time. Attempts had been made to induce the calves to drink the virus in their water, but they refused to do so.

The calves, for facility of description, were designated as Nos. 1, 2, and 3; that which was kept for comparison being No. 4. On the fourth day No. 2 had a profuse and very fetid diarrhœa, but it was well on the evening of the next day. The administration of the tuberculous matter took place on September 19th, and at the commencement of October the following notes were made with regard to the condition of the calves:—No. 1 (twelve months old), has lost condition; it rests more; the respirations are quickened, and while the animal is lying number thirty-eight or forty per minute; the appetite is unimpaired, though rumination is always slow at the commencement. No. 2 (six months old), and which had diarrhœa, appears to be in excellent health. No. 3 (six months old) is the same. On October 5th and 7th, Nos. 1 and 3 received a certain quantity of tuberculous matter from lungs not so much diseased as the others, but in which it was possible to discover recent tubercular infiltrations. No. 2 did not receive any; for if this administration would produce tuberculosis, Nos. 1 and 3 would furnish the proof. It was hoped that No. 3 would escape the effects of the virus, as it was valuable in a pecuniary sense, and its sale would have diminished the expense of the costly experiment.

Further details of the symptoms are omitted, but the *dénouement* surprised Chauveau by the rapidity with which it was developed. Calf No. 1 exhibited the first evident symptoms of tuberculosis. From October 9th there could no longer be any doubt as to the success of the administration; as, although it still preserved its appetite, it became emaciated in an extraordinary manner, while the coat became rough and staring, and the animal had fits of coughing morning and evening, particularly after drinking; and No. 2 soon began to exhibit all the symptoms of tubercular infection, its coat assumed the same aspect as in the other, and it lost its excellent condition, notwithstanding the undiminished appetite, and it coughed at times. The most remarkable symptom it offered, however, was in the appearance of the lymphatic glands of the neck near the larynx. There was also at times an intermittent "roaring," which the slightest pressure on the larynx produced at once. No. 3 resisted longest, as it offered no appreciable derangement of health until October 25th. From that date, however, the phenomena of tuberculous infection ensued with the greatest rapidity. In eight days the creature could scarcely be recognised; though it is true that it had slight diarrhœa, and did not have the same appetite as the others. The cough was nearly incessant; the peri-laryngeal glands became

involved, and one of them, the left submaxillary gland, was as large as a goose's egg. During the whole of this time No. 4 remained in perfect health.

On November 10th, fifty-two days from the commencement of the experiment, it was considered time to close it; and at this period it was sufficient to enter the stable and cast a glance at the four animals, to appreciate the remarkable results obtained. The miserable aspect of the three infected creatures contrasted in the most extraordinary manner with the thriving condition of the non-infected one, which at the commencement was the puniest.

(*To be continued.*) 195

THE CULTIVATION OF MEDICINAL PLANTS ON RAILWAY BANKS.

A LETTER has been forwarded to the *Garden* by Mr. James M'Nab, of the Royal Gardens, Edinburgh, upon a topic which has often been discussed by railway travellers, namely, the turning of railway banks and slopes to a more profitable account. Among other suggestions he points out that many plants suitable for the production of essential oils might be successfully cultivated upon them, such as the peppermint, spearmint, lavender, thyme, and balm, and in many places the hundred-leaved and damask roses. Other plants, some more immediately connected with the healing art, which he thinks could be profitably grown in such localities, are the chamomile (*Anthemis nobilis*), horehound (*Marrubium vulgare*), rue (*Ruta graveolens*), tansy (*Tanacetum vulgare*), the wormwoods (*Artemisia Abrotanum* and *A. Absinthium*), elecampane (*Inula Helenium*), wild convolvulus (*Convolvulus sepium* and *C. arvensis*), henbane (*Hyoscyamus niger*), belladonna or deadly nightshade (*Atropa belladonna*), monkshood (*Aconitum napellus*), bittersweet (*Solanum dulcamara*), foxglove (*Digitalis purpurea*), the great mullein (*Verbascum thapsus*), and the chicory (*Cichorium Intybus*). The wake-robin (*Arum maculatum*) would also succeed well, and its tubers might be found to yield a superior starch to that produced by the plants grown in woods, which is its native habitation.—*Pharm. Journ. and Trans.*

Analysis of Continental Journals.

By G. Fleming, M.R.C.V.S., Royal Engineers.

EXPERIMENTS TO ELUCIDATE THE TIME NECESSARY FOR THE ABSORPTION OF THE RABIFIC VIRUS.

In the *Centralblatt für Chirurgie*, Seifman, of the Veterinary Institute of Kazan, calls attention to his subject. He thinks that, up to the present time, no experiments have been made which decides the question whether the virus of Rabies remains localised in the inoculated part during the entire period of incubation; or if, at this period, it has already gradually penetrated the organism.

The period of incubation, as is well known, may extend over several months, and even to a year or more; and such being the fact, it may be asked if it is rational to interfere with and to cauterise the inoculation wound after its cicatrisation.

In order to solve this important problem—important in a theoretical as well as in a practical point of view—Seifman proposes to undertake a series of experiments conducted in the following manner: After selecting animals of the same species, sex, size, &c., and which are not liable to spontaneous Rabies (as lambs, sucking pigs, poultry), let them be inoculated in different parts—but the same in all—with the fresh saliva of a rabid dog. The animals inoculated should then be classed in equal numbers in two categories; those of the first category must not be submitted to any treatment, but those of the second should, on the contrary, be treated at intervals, say every fifteen days, when one of the points of inoculation should be completely destroyed by cauterisation. All the animals must be kept under observation for a somewhat considerable period—six months at least; if after that time Rabies appears among those of the first category, and does not affect those of the second, we should be authorised in concluding, after a large number of such experiments, that the virus remains localised at the inoculated part for the entire period of incubation. Seifman is about to commence these experiments in the Veterinary Institute of which he is director, and he is desirous that his professional colleagues should endeavour with him to do all they can to solve the problem.

(There can be no doubt as to the necessity for instituting experiments to solve a number of difficult problems connected with Rabies, and it is earnestly to be hoped that Seifman, who is well qualified for such a task as that he has set him-

self, will be able to throw some light on this apparently obscure matter. I have said "apparently," because there are many cases recorded which would go to prove that unless the virus has been destroyed at the inoculated part *not long after it has been deposited*, absolute safety is not ensured. Instances are numerous in which the wounds inflicted by rabid dogs, and which were thoroughly cauterised, though not for some time after they were received, have been followed by the disease after a longer or shorter period of latency. These examples are certainly opposed to the hypothesis that the infecting element remains localised during the greater part of the latent interval; or to that propounded by Virchow, to the effect that the contagium has an action similar to that of a ferment, that the new elements introduced at the point of inoculation are continually carried into the blood, by means of which they act on the nervous system; and that in the incubatory period the contagium would be eliminated from the blood during the course of the regulating metamorphic movements, did not the elements of which it is composed accumulate in excessive quantity, and thus produce the disease. Seifman's experiments will tend to confirm or disprove these hypotheses; though to be of any value they must be conducted with the greatest judgment and care, and be sufficiently numerous and varied to obviate drawing wrong inferences and erroneous conclusions, such as only too frequently result from limited and imperfectly considered experiments with regard to this and other contagious maladies. Seifman certainly has an advantage in dealing with a disease which is transmissible to perhaps all warm-blooded creatures; and he therefore cannot go far astray if he ventures beyond one species with the inoculations, and includes different animals in his experiments. And, besides, the virus of Rabies, when it does take effect, always produces certain well-defined pathognomonic symptoms which cannot mislead, and which are entirely independent of the way in which it has obtained access to the blood. In this respect it differs from at least one contagious malady—bovine Pleuro-pneumonia—inoculation with the virus of which, though inducing general systemic disturbance, yet only produces local lesions similar to those observed in the lungs as a result of natural infection; and, again, this malady is peculiar to one species—the bovine—so that no one would expect any useful result from the inoculation of sheep, dogs, pigs, or horses with the virulent fluid. Veterinarians will look forward with much interest to the conclusions which Professor Seifman may be able to draw from his experiments).

CATTLE-PLAGUE INOCULATION.

Max and Raupach have issued a report (published in Part II of the *Vierteljahresschrift* for 1874) on the system and results of the inoculations practised at the Institute of Karlofka, government of Pultawa, Russia, which is somewhat interesting. These veterinarians believe, with many others, that the Cattle-plague does not originate spontaneously in the Russian Steppes, but is always an imported malady; and they are also partisans of inoculation as a protective measure, because they are convinced that an animal which has been successfully inoculated is guaranteed against another attack. But it is above all things essential to know whether recourse to this measure should be had everywhere, or if it ought only to be adopted in certain exceptional conditions. Raupach and Max appear inclined to think that protective inoculation might be introduced as a general measure into the Steppes of Russia, if it were combined with a universal system of cattle insurance.

The inoculations in 1872 and 1873 were practised on 1728 cattle; and it was noted that the incubatory period or stage was from four to seven days, and that the malady declared itself more promptly in animals in good condition and well fed, than in those which were not so circumstanced. But, as Raupach observes, this is the case in the ordinary natural infection of Cattle-plague. The form of the disease produced by inoculation was that which has sometimes been designated the "catarrhal," in which there are nasal and abundant lachrymal discharge, injection of the mucous membrane, snorting or stertorous breathing and cough; with short and hurried respiration, much salivation, the milk diminished in quantity and more aqueous, and more or less severe diarrhœa. The typhoid condition, marked by prostration and stupor, with dysentery and evident alteration of the blood, in which the life of the affected animal is in great danger, was rarely witnessed after inoculation. It was admitted, however, that even in these cases there were already gangrenous complications, and that they were not the Cattle-plague, properly speaking—the freely-developed virulent malady. This result, according to the reporters, more particularly depends on the choice made of the virus for inoculating. When it is to be derived from animals having the disease in a natural non-inoculated form, care must be taken to choose subjects which do not present typhoid symptoms, nor the disease in a grave form.

The 1728 inoculations were made in almost equal proportions in droves perfectly healthy, as well as to those already infected. The number operated upon in the first category was 865, of which 822 (95·03 per cent.) recovered, and 43 (4·97 per cent.) perished; with 699 animals the disease was in a benignant form, and not one died; with 166 head it assumed somewhat of a typhoid character, and the mortality was 42. Of the 863 animals already more or less contaminated, 728 recovered and 135 succumbed. With 70 of these the disease appeared on the fourth day after inoculation, with 225 on the fifth day, with 303 on the sixth day, with 208 on the seventh day, and with 57 on the eighth day.

THE TRANSMISSIBILITY OF APHTHOUS FEVER TO THE EQUINE SPECIES.

In an analysis of the first number of the fifth part of the *Tijdschrift voor veeartsenijkunde,* a Netherland veterinary periodical conducted by Professor Hengeveld, of the Utrecht Veterinary School; Janné, Veterinary Inspector for the provinces of Limbourg and North Brabant; and Army Veterinary Surgeon Hinze, there is much interesting matter. For instance, Janné, senr., gives an excellent dissertation on "aphthous fever," simple or complicated, benignant or malignant, of cattle and pigs, in which allusion is made to the contagiferous properties of the disease, not only with regard to animals of the same species, but also as to its transmissibility to mankind and horses. According to his observations, and he is only one of a number of authorities, the human and equine species are not influenced by the virus of this disease in a "volatile" form, but its ingestion in a "fixed" condition will affect them. A striking instance of this is adduced in the case of three horses attacked with the disease, and which also infected the veterinary surgeon of Maestricht who was attending them.

THE CONTAGIOUSNESS OF RABIES.

In the *Wien Medizin Wochenschrift* (Nos. 14 and 15) for the present year, Lorinser gives the history of two cases of Hydrophobia, one of which was that of Professor Hermann, of Prague, who was bitten by a rabid dog, and the other that of a young woman who was likewise wounded by a dog in that condition; both having succumbed to the disease, which was developed after a moderate period of latency, and ran its course rapidly. Commenting on these cases, Lorinser, like a few others who have

not extended their observations or inquiries beyond their own species, comes to the conclusion that there is no specific poison or virus in the saliva of the mad dog; that Hydrophobia is solely the result of mental disturbance, induced by the victim constantly directing his mind to the chances of becoming affected with the malady, and that it will no longer exist when it is not believed in.

[This is a somewhat old notion, and has only been entertained by people who have had no opportunity of observing or inquiring into the malady as it affects the lower animals. If Dr. Lorinser had extended his medical studies into the domain of comparative pathology, he would doubtless have come to a widely different conclusion. Horses, dogs, pigs, sheep, cattle, poultry, and other creatures, die from Rabies, either accidentally or experimentally produced; and yet I fancy no one who had any regard for his reputation, so far as sanity is concerned, would think of asserting that the disease in any of these animals was "solely the result of *mental disturbance* induced by the victim constantly directing *its mind* to the chances of becoming affected, and that it will escape if it does not believe in it."

Infants, whose mental faculties have not been developed to any extent; and children who, beyond the pain of the wound inflicted by the rabid dog, did not know what had occurred, have perished from inoculation with the viruliferous saliva months after the accident. Dr. Lorinser must have been oblivious of these undeniable facts when he published such an absurd conclusion: a conclusion which is entirely opposed to everything we know pertaining to the malady. People do not take variola, measles, scarlatina, or any other specific contagious disease, through mental disturbance, any more than animals acquire their transmissible diseases through the influence of their mind being constantly directed to the chances of becoming affected. It is high time that such vagaries of the imagination should be eschewed by medical men, as they are calculated to do much harm to the public, and to injure the reputation of science.]

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF COUNCIL HELD NOVEMBER 26TH, 1874.

Present.—The President, in the chair; Professor Pritchard, Assistant-Professor Axe; Messrs. Harpley, Naylor, Burrell,

Moon, Field, Gowing, Fleming, Mayer, Withers, Moore, Cox Woodger, and the Secretary.

The Secretary read the notice convening the meeting, which stated that it had been called for the purpose of taking into consideration the Charter of Incorporation applied for by the Governors of the Royal Veterinary College, and for other business.

The minutes of the last meeting were read and confirmed.

The Secretary then read a letter from Professor M'Call, regretting his inability to attend the Special Meeting of Council.

The Chairman in explaining the object of the meeting said that it was thought by many members of the Council with whom he had had conferences that the application of the Governors of the Royal Veterinary College for a Charter of Incorporation was fraught with danger to the interests and privileges of the Royal College of Veterinary Surgeons. The meeting had, therefore, been called by him, in order that the subject might be discussed in an impartial manner, and such steps be taken by the Council as would prevent the interests of the Royal College of Veterinary Surgeons from being infringed upon. Since the last meeting the Secretary and himself had called upon Messrs. Loch and Maclaurin, their Parliamentary agents, for the purpose of ascertaining whether the Charter of Incorporation sought for was really in existence. They ascertained that it was, and sent a copy of it to the Secretary, who would read it, together with the correspondence which had taken place with Messrs. Loch and Maclaurin, in order that the members of Council might know what had been done.

The following letter in reply to the one sent to Professor Simonds was read.

"Royal Veterinary College
"*Oct.* 16*th*, 1874.

"Dear Sir,—I beg to acknowledge the receipt of your note, in which you ask to be supplied with information relative to the proposed Charter of Incorporation of this Institution. As I am unable to supply this information without authority, I can only promise you that your application shall be laid before the Governors at their next meeting.

"(Signed) Jas. B. Simonds.

"W. H. Coates, Secretary,
"Royal College of Veterinary Surgeons."

The Secretary said that the President was anxious to ascertain when the next meeting of Governors took place, and Professor Simonds wrote to the effect:

"That he had no reason for thinking that the Governors would meet before their usual Quarterly Meeting at the commencement of the new year."

The following letters were read:

A letter from the President, returning Messrs. Loch and Maclaurin's and Mr. Wilkinson's letters.

A letter from Messrs. Loch and Maclaurin, dated October 26th.

Letter to Messrs. Loch and Maclaurin to ascertain whether the proposed Charter infringed on the provisions of the existing Charter granted to the Royal College of Veterinary Surgeons.

Letter in reply from Messrs. Loch and Maclaurin dated October 28th, enclosing a copy of the proposed Charter prayed for by the Governors of the Royal Veterinary College.

Messrs Loch and Maclaurin wrote on 7th November, 1874, "giving an opinion respecting the draft Charter of Incorporation applied for by the Royal Veterinary College."

Letter read from Messrs. Loch and Maclaurin, dated November 25th, stating that the Charter of Incorporation applied for by the Royal Veterinary College had not yet been signed, and that it rests with the Council of the Royal College of Veterinary Surgeons to say whether they would wish to be advised by counsel.

The Secretary stated that the President wrote "that he had no objection to the proposed Charter being submitted for the opinion of counsel in order to avert any grounds for alarm."

The Chairman then read a letter he had received from Professor Simonds, of which the following is a copy:

"ROYAL VETERINARY COLLEGE,
"GREAT COLLEGE STREET, CAMDEN TOWN, N.W.,
"LONDON; *Nov. 25th*, 1874.

"DEAR MR. PRESIDENT,—As I am prevented from attending the meeting of the Council of the Royal College of Veterinary Surgeons to-morrow by a previous engagement which I cannot postpone, I have thought it right to state to you in a few words the objects which the Governors of the Royal Veterinary College seek to obtain by a Charter of Incorporation.

"These objects, as you will see, are two: *first*, a better security for their present large and increasing property; and

secondly, the elevation of their students whilst at the college and when they afterwards distinguish themselves as *members of the profession*.

"In preparing the Charter, the Governors have never lost sight of the distinction which exists between a Collegiate teaching body and the University which you represent; and they have strictly confined their powers to the promotion of the objects of their school, leaving it to your body to grant degrees as only a University should when in possession of the necessary legal powers to enable it to do so.

"You are doubtless aware that the Royal College of Veterinary Surgeons must obtain a supplementary Charter before it can confer any degree beyond that of mere membership, and that this is a matter which strictly pertains to your corporate body.

"I may add that the Governors are asking for no more in the bestowing of honours than they have power to do without a Charter, but that in granting these they wish for the additional distinction which a Royal Charter will confer.

"I am, Mr. President,

"Yours very truly,

(Signed) "JAS. B. SIMONDS.

"Edw. Coleman Dray, Esq.,
"President of the Royal College of Veterinary Surgeons."

The Secretary then read the proposed Charter.

The Chairman called upon Mr. Harpley, who, he said, had given the subject a great deal of consideration, to address the Council.

Mr. Harpley said he was of opinion that this was entirely a solicitor's case and not a Parliamentary agent's at all. He thought that, in calling the meeting together, the President had adopted a very wise and proper course, because anything that was likely to interfere with the present Charter was a matter of serious consideration to every member of the Council. The proposed Charter had somewhat taken the Council by surprise. He thought that Mr. Wilkinson, who acts as joint solicitor to the Royal Veterinary College of London and the Royal College of Veterinary Surgeons, should, in common courtesy, have informed the Council of the steps that were to be taken with reference to the procuring of the proposed Charter. As the matter came really from the Governors of the Royal Veterinary College, the Council must not in any way suppose that Professor Simonds was acting antagonistic to them. He was acting, no doubt, in the position of secretary to that institution; but it would

have been better if he had sent the information, which was now in the possession of the Council, at an earlier date. The question to be considered was, whether the proposed Charter would interfere with the rights and privileges of the Royal College of Veterinary Surgeons. The Crown was perfectly competent to grant it; but if it should be found that it was likely to interfere with the existing Charter it behoved the Council to try and get a clause inserted, so as to prevent anything like infringement upon their present privileges. In the preamble the Royal College of Veterinary Surgeons was mentioned, but in the 13th clause it was ignored altogether. It was most important to see the exact meaning of that clause, bearing, as it did, on the certificates of distinction. In that respect he rather took it as being a sort of damaging opposition to the Royal College of Veterinary Surgeons. It was only necessary for him to show what the feeling of the profession had been, as to a teaching-school having the power of conferring degrees; in an inaugural address delivered by Mr. Greaves at the Yorkshire Veterinary Medical Society, held at Leeds 25th January, 1867, he said: "I cannot laud a movement that sets up a school against a chartered body. It is a cry now throughout the whole country that this abnormal state of things should cease." And when Professor Spooner attended before the Duke of Marlborough with reference to the Scotch Charter, he stated that it would in a small professional body have a damaging influence by creating a rivalry, not in education, but in conferring diplomas and degrees (see *Veterinarian*, vol. xl, page 749). And in the annual report, for 1867, it stated that a deputation had waited upon Mr. Bruce with reference to the Veterinary Medical Act, and at that meeting the Home Secretary stated that "he was duly impressed with the importance of examining boards acting independently of the teaching schools, and he deprecated the idea of granting the power of conferring degrees to any educational establishment" (*Veterinarian*, vol. xl, page 457). He would therefore move —"That a letter be sent by the President to the Home Secretary, praying that he will not advise Her Majesty to grant the Charter of Incorporation applied for by the Governors of the Royal Veterinary College, until the Council of the Royal College of Veterinary Surgeons (a Chartered body) have had an opportunity of consulting a solicitor or instructing counsel with reference to the terms of the said Charter, so as to satisfy the Council that it does not infringe any of the rights and privileges appertaining to the Charter of the Royal College of Veterinary Surgeons." He should also propose

that the President and Secretary wait upon Mr. Wilkinson, and ask him whether he thinks, from his position of joint solicitor, he can advise the Council as to the proposed Charter. If he should answer to the effect that he was not in a position to advise the Council, he thought that the opinion of one of the best solicitors who could be found should be obtained, and, if suggested by the solicitor that the opinion of counsel should be taken, the Council should obtain it. If this were done, the Council would be able to meet the body corporate at the Annual Meeting with the statement that they had fully investigated the matter, and they would then be in a position to take such steps as would be considered necessary.

Mr. Fleming seconded the motion. He was sure the members would regret the absence on that and the previous Council Meeting of Professor Simonds, who, as secretary of the Royal Veterinary College, would, if necessary, have been able to make many explanations. He thought, with Mr. Harpley, that the amount of secrecy which had been exercised in relation to the proposed Charter had laid the action of the Governors open to suspicion. The application for it had been only accidentally discovered in the newspapers, and there had not been the faintest intimation given either by the solicitor or by the Royal Veterinary College. He did not say that the Governors intended any harm to the Royal College of Veterinary Surgeons; but he thought if the Royal Veterinary College had the power of conferring degrees it would, to a large extent, be usurping the functions of the body corporate. This was a point which should be cleared up, because the Council was responsible to the entire profession, both now and hereafter, for anything which might be done prejudicial to the existing Charter. A few years ago the Royal College of Veterinnry Surgeons had to step in and use its utmost endeavours to prevent a Scotch school from obtaining a Charter. If the proposed Charter were granted to the Royal Veterinary College, the Scotch schools would think themselves at a disadvantage, and, wishing to be on an equal footing with the London school, would apply for a Charter, and probably obtain it. He thought that the request for the power to confer these degrees was entirely superfluous, inasmuch as they could have little weight with the public. The Royal College of Veterinary Surgeons was the University of the profession, and degrees granted by a school would be of comparatively little value. He could not see from the Charter that anything was to be done for the elevation of the students, or to enhance their education.

At present the student attends the school for twelve months, or little more; and that period was entirely insufficient. He therefore thought that the strong point urged by the Governors for obtaining the Charter—namely, the elevation of the education of the students—did not exist on the face of it.

Mr. Mayer, as one of the few now alive who assisted in obtaining the present Charter, detailed the successive steps which the Council had taken to get the matter carried through, and the difficulties that had then to be contended with. He enjoined the necessity of caution on the part of the Council, and thought that the opinion of a solicitor or counsel should be obtained, and more especially on the 13th Clause, which gave the power of appointing fellowships and conferring distinctions. He also thought that in applying for a Charter, the title of Royal Veterinary College should be altered; as, in the case of a Charter being granted, a greater distinction should be made between the name of the College of examination and that of the College of education.

Professor Axe thought with Mr. Harpley that, in dealing with the matter, the most equitable course to pursue would be to consult a solicitor, and have an opinion upon the way in which the Council should proceed. He did not think that the Council ought to look upon the conduct of Mr. Wilkinson and Professor Simonds in the light suggested by Mr. Harpley. Mr. Wilkinson, he considered, would have been guilty of great misconduct had he communicated to the Council any business that might be transacted between him and the Royal Veterinary College. The same remark might apply to Professor Simonds, so that he could not look upon these two gentlemen as having committed any breach of etiquette in the business. He did not consider that there was anything in Clause 13, that had a tendency either to injure or ignore the Royal College of Veterinary Surgeons. That clause simply provided that the Governors of the Royal Veterinary College shall be invested with the power of granting honours—such as fellowships—in fact, of awarding prizes to their students, and honours after they had entered the profession, not of awarding degrees. These distinctions could not be granted to any one who was not already a member of, and had received a diploma from, the Royal College of Veterinary Surgeons. There was a difference between a degree as granted by a body such as the Royal College of Veterinary Surgeons, and the distinctions referred to in the proposed Charter. Speaking as a member of the Council, he was not disposed to look upon this step as having in it any sort of opposition or rivalry which had been

attributed to it. It was quite true, as suggested by Mr. Fleming, that the other colleges would necessarily seek to place themselves upon the same footing as the Royal Veterinary College, and, he thought, rightly so. He did not think there could be any objection to the granting of distinctions by these colleges. If the Royal College of Veterinary Surgeons thought of getting a supplementary Charter and of granting higher degrees than that of membership, they would be of more value in the eyes of the public than those granted by the teaching schools. With reference to the remark made by Mr. Fleming that there exists upon the face of the proposed Charter no inducement to the elevation of the students, he could only say that, in his opinion, it did exist. It existed in the fact that the student would know that he might, by a certain course of conduct, realise as the reward those distinctions which are prayed for in the Charter. Apart from these considerations, he thought that every step should be taken in order that the Council might determine in what way, or if in any way, the proposed Charter would be likely to interfere with the interests and the privileges of the Royal College of Veterinary Surgeons. He had no doubt that the Governors of the Royal Veterinary College felt themselves to be in a position entirely apart from the Royal College of Veterinary Surgeons, and were acting in order to be able to offer to their students inducements to progress. He could not see any objection to other colleges taking the same step, nor to their granting these distinctions. If it could be shown that the Governors of the Royal Veterinary College could grant these distinctions without interfering with the privileges of the Royal College of Veterinary Surgeons, he could see no substantial reason why that Charter should not be obtained. For his own part he had not seen, from the suggestions that had been made, anything which was likely to interfere or infringe upon the existing Charter.

Mr. Gowing thought that to simplify the matter the opinion of some disinterested solicitor should be taken. Mr. Wilkinson would, no doubt, see the reasonableness of this if fairly put to him, as no man can serve two masters. It would be desirable, in the event of the Charter being obtained, that a guarding clause should be inserted; so that the Royal Veterinary College would not, now or hereafter, interfere with the liberties of the Royal College of Veterinary Surgeons. A clause of this nature would go a great way to allay the fears of the Council, and would also be a precedent to other schools which might hereafter apply for a Charter.

Mr. Naylor, referring to the remark made by Mr. Axe as

to the propriety of the Royal Veterinary College granting degrees, would remind him that a fellowship was given by a college in accordance with the position the student had obtained in the general examination. With regard to free scholarships or otherwise, he believed that the Governors of the Royal Veterinary College had a full right to give them to the pupils during the time they were resident there; but that a fellowship or other distinction could not be given unless they had gained a certain position at their examination by the Board of Examiners. The great misfortune was that the public seemed to take to any one who produced sufficient proof that he was a veterinary surgeon, whether he was competent or not; and that if any certificate whatever was given by any teaching school, the Council would have no power to control incompetent persons, and the profession generally would be degraded. He thought that, in order to secure competent veterinary surgeons, the teaching schools should determine to increase the severity of their preliminary examinations.

Mr. Moore said it struck him that the movement on the part of the Veterinary College had been going on for some time in a hole-and-corner way. The Veterinary College had opposed the Scotch Charter, and it was singular that they were now asking for a Charter for themselves to the exclusion of the other schools, who had as good a claim for a charter as themselves. Looking at the proposed Charter, he thought it was as clear as noonday that the Royal Veterinary College wanted to supersede the Royal College of Veterinary Surgeons.

Mr. Cox said that, looking at the Royal Veterinary College in its commercial aspect, he did not believe there was any member of the profession but would strive to promote rather than hinder the advance of that institution; but, at the same time, he thought it would be fraught with great mischief to the profession if the public were misled—as it would be misled—by communion of titles and distinctions. A member of the Royal College of Veterinary Surgeons would be no more in the public estimate than a member of the Royal Veterinary College. He had remarked for the last few years that the profession had been held in greater estimation by the public than heretofore; and he thought it due to the public that it should be clearly understood that a member of the Royal College of Veterinary Surgeons was simply that and no other, and that any person holding another title was not a member of the Royal College of Veterinary Surgeons. He thought that the Council should apply to the Home

Secretary to stay all progress in the matter at present until further inquiries were made.

The motion, upon being put to the Council, was carried.

Mr. Mayer moved—"That the Secretary be requested to communicate to Messrs. Loch and Maclaurin the resolution of Council, and direct them to take an opinion upon the provisions of the proposed Charter to the Royal Veterinary College, more especially Clause 13, bearing on certificates of distinction either now or hereafter."

Mr. Cox seconded the motion, which was carried.

After some conversation in reference to the summoning of the Parliamentary Committee,

The Chairman said that, considering the action which was about to be taken, the Parliamentary Committee would be summoned in order that it might be informed of what had taken place; or, if it was not of very great importance, it would be communicated with by letter from the Secretary.

Renewal of Lease.

The Secretary stated that the agreement for the renewal of the lease of the College sent to Messrs. Wilkinson for approval had now been returned, and that the only alteration made in it since it was last before the Council was that the house was to be painted the first year.

The agreement was then signed and sealed.

A conversation having ensued as to the advisability of acquainting Mr. Wilkinson with the steps which had already been taken by the Council in reference to the proposed Charter, it was ultimately

Moved by Mr. Cox,

Seconded by Mr. Withers, and resolved,

"That the Parliamentary Committee be at once communicated with by the President, and urged to watch the proceedings which may arise in connection with the draft of proposed Charter to the Royal Veterinary College, and to act in the matter as they may deem necessary."

The proceedings then terminated.

CENTRAL VETERINARY MEDICAL SOCIETY.

An ordinary meeting of the above Society was held on the evening of December 3rd, at the Royal College of Veterinary Surgeons, J. Roalfe Cox, Esq., President, in the chair.

Professor Tuson, F.C.S., and an Honorary Fellow of the

Society, delivered a lecture "On the Chemistry of Water in relation to the Health of Animals."*

The lecturer commenced by stating that water in a state of perfect purity is never met with in nature. Rain, being usually less contaminated than any other kind of water, is to be preferred for the use of animals as a beverage, providing proper care be taken in its collection and storage.

The two classes of impurity, organic and inorganic, met with in river and well waters were next referred to, the methods of identifying them explained, and their significance pointed out. The professor then described the modes of detecting chlorides and nitrates, and observed that, although harmless in themselves, their presence in most instances conclusively indicated that waters in which they were found had been, even though no organic matter existed in them at the present time, at some period of their existence polluted by sewage, drainage from soils, &c.

The nature and causes of temporary and permanent hardness were next dwelt upon. It was shown that the former is due to the bicarbonates of lime and magnesia, which could be removed by boiling or the addition of lime, and that the latter is occasioned by the sulphates of lime and magnesia, which could be decomposed by carbonate of soda or wood ashes. By these processes hard waters were softened.

The discourse was illustrated throughout by experiments and by reference to cases investigated by Professor Simonds and the lecturer, in which disease and death had resulted in the domesticated animals from their drinking waters polluted with organic matters, hard waters, as well as waters the temperature of which was much below that of the atmosphere in which the animals were living. Professor Tuson, in conclusion, promised on some future occasion to treat of waters contaminated with lead and other noxious impurities.

After a short discussion, and the passing of a vote of thanks to the lecturer, the meeting terminated.

James Rowe, Jun.
Hon. Sec.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

The twenty-eighth meeting of this Society was held at the Hen and Chickens Hotel, Birmingham, on Tuesday, December 1st,

* This lecture will be published *in extenso* in a future number of this Journal.

1874. The President, Mr. F. Blakeway, in the chair. There were also present—Messrs. Greaves, Manchester; Bailey, Leicester; Carless, Stafford; Proctor, Coventry; Stanley, sen., and Stanley, jun., Birmingham; Cartwright, Wolverhampton; Perrins, Worcester; Ison, Atherstone; Markham, Rugeley; Litt, Shrewsbury; Olver, Tamworth, and other members of the profession.

The minutes of last meeting were read and adopted.

Mr. T. Greaves, of Manchester, was unanimously elected President for the ensuing year.

Mr. Ison, Atherstone; Mr. Perrins, Worcester; and Mr. Olver, Tamworth, were chosen Vice-Presidents.

Mr. A. B. Proctor was re-elected Treasurer.

Mr. J. Greaves read the following interesting paper on "The Nature and Treatment of Sandcrack."

The subject of sandcrack in the horse's foot may be considered by some to possess only a minor claim upon the attention of the veterinary surgeon. If there are any practitioners here who entertain such views, surely it is because they have not sufficiently considered the matter, or else have been placed in singularly exceptional circumstances. It is quite true that horses in towns, drawing heavy loads on hard paved streets, are far more subject to sandcracks than those whose work is confined chiefly to the roads and the fields. Draft horses are chiefly troubled with cracks in the toe of the hind feet, and light bred horses to cracks in the quarters of the forefeet. Sandcracks, wherever they may be situated, may be produced in a moment by the bursting of the hoof consequent on some violent sudden concussion, if the hoof is dry and brittle. Only those veterinary surgeons whose practice lies amongst horses of this description have any conception of the amount of pain and irritation to which sandcracks give rise, more especially toe sandcracks. Occasionally blood will be seen to exude from the crack, and irritative fever runs very high; the inflammation is in some cases so intense that the laminæ become destroyed and slough away, and caries of the coffin bone occurs; in all such cases, and even in milder cases, the cracks prove serious and troublesome in the extreme. Even when the horses are free from lameness the hoof is constantly giving way again and again, and this often happens when the horse is most wanted, when there is an excess of work, and consequently more stress put upon the horses than usual; hence the greater is the disappointment, annoyance, and inconvenience to the owner. It is our bounden duty to find out and apply the best method to obviate this unsatisfactory state of things, to render such animals not

only useful, but to ensure their continued usefulness to the owner.

In choosing the subject of sandcrack I am impelled by a ruling passion within me to concentrate all my thoughts and all my energies upon one subject at a time, in order, if possible, to understand it thoroughly, and to perfect as far as in me lies the treatment of that particular ailment. For forty years I have been continually engaged in the treatment of these cases. I have had four forges the greater portion of the time, shoeing those kind of horses more subject to sandcrack than any other class, many of them shunt horses; at this time I have the medical charge of over 230 shunt horses.

The necessity and great importance of the practitioner possessing sound knowledge in the treatment of foot lameness is proved by the fact that in all large towns nine tenths of our lame patients are suffering from foot lameness, and the man who is most handy and expert in his examination of a foot, can at once form a sound and correct notion as to the nature of the case, and can restore such animal the soonest to usefulness, will always wield a power and have an immeasurable advantage over the practitioner who is deficient in his practical knowledge of foot lameness, however clear such a one may be in his knowledge of internal diseases. This practical knowledge of the foot is, in fact, essential in every large town, and no kind of instruction can convey the knowledge, only self-application can assist him. Reading and attending lectures, of themselves, however excellent they may be, can never give any one this knowledge.

The Nature of Sandcrack.

A sandcrack is simply a bursting of the horny matrix that holds together the horn-fibres or horn-tubes of the hoof. It may only reach to a very limited extent at the coronet, or it may extend from the coronet to the ground surface; it may come on gradually, or it may come on suddenly; when it comes on suddenly it is (as I have before stated) attended with great suffering. Occasionally we have suppuration in the fissure, sloughing of laminæ, caries of bone, superfluous granulation, and in very severe cases the animal gives up, as it were, refuses all food, sinks, and dies. I fully believe that in many cases there is a constitutional tendency to sandcrack, for if we get the fissure to grow out and entirely disappear in one place another crack will make its appearance in another part of the hoof; and we often notice that the horse with a sandcrack in one foot, whether it be hind or fore, will sooner or later have another sandcrack in one of the other feet. I am not of opinion that any particular colour of foot is more liable to sandcrack than another; flat spreading feet are least liable to it.

The Treatment of Sandcrack.

In every recent case, if my patient is suffering much pain, I have the shoe carefully removed at once and left off, poultice the foot with bran and a little linseed meal in it, made into a poultice with warm water; this treatment I continue for several days, being careful that the poultice is not too heavy, and hanging upon the tender coronet. I frequently bleed in the thigh or the arm in such cases, always with benefit; I give physic, and if matter forms I give it exit; if sloughing of laminæ or caries takes place, I obtain a free opening for the escape of discharge, and employ a dressing of linseed oil and lime water equal parts; if fungus rises, I am very careful to remove any horn that may be pressing upon it. I use a mild astringent, or even caustic; the best is a piece of thick flannel soaked in muriatic acid, which may be retained in its place for forty-eight hours with tow and bandage, or I may excise the growth with the knife; when the healing process is sluggish, I always find an application of solution of chloride of zinc, 2 drachms to 8 oz. water, an excellent dressing; as the soreness subsides I apply a blister to the coronet; this I repeat again and again, to stimulate the growth of sound horn, the horse standing barefoot all the time, and standing upon a good thickness of horse droppings; I believe you may do a great deal of good to these dry and contracted feet by rubbing into the hoof and coronet whilst in a melted state an ointment composed of one part of palm oil and two parts tar every week. As soon as the pain and tenderness have quite subsided, and the foot become quite cool, I then call to my aid some one of the many contrivances used to support the foot and close the fissure.

Shoeing for Sandcrack.

It is customary to apply a round-barred shoe with large side clips, sometimes called wingclips, the object of which is to hold the lower part of the foot together, and thus prevent the crack from opening. Fit the shoe so that it will not touch the foot at the part below the crack. This method is resorted to both in the hind foot and in the fore foot. The impression on my mind is that these clips are not of so much importance as they are usually considered to be. It is not the lower part of the fissure that expands, but the upper portion, and it is really at this part where the distension or bursting process is constantly going on, and the influence of these wingclips does not extend to the upper portion of the crack. I have also satisfied myself that it is a mistake to shoe a foot that is affected with sandcrack with a round-barred shoe, so fitted that the frog shall have a bearing upon the shoe. If you will closely observe the action of a foot so shod, you will see distinctly when the horse throws his weight into the shoe that the frog is pressed upwards, the lateral cartilages are dis-

tended, the coronet generally protrudes, and the crack at the same time dilates. This is wrong in principle, but if you have a hollow foot, and nothing whatever supporting the frog, you will find when the weight is thrown on this foot that the foot yields to the weight; it descends, the whole coronet shrinks in, and the crack closes. Have your shoe without a toepiece on it; rather have it curved a little at the toe to lessen the leverage as much as possible. Have a bar on the heel of the shoe, or a patten shoe one and a half or two inches high; this will place the foot in the easiest position, whether the horse be standing still or in motion.

The Various Contrivances Used.

I will now enumerate the different methods in use for the purpose of curing sandcrack, discuss their action, and endeavour to show their individual defects and merits.

1st.—Firing. There are three modes of using the firing-iron. One is to fire across the top of the crack, or, rather, just above it, as deep as you dare, for the purpose of cutting off all connection between the crack and the tissues from which the new hoof is secreted. Firing across the crack in the hoof is completely useless. Another mode is to have a firing-iron of a semicircular form a little larger than the circumference of a penny-piece. This you burn into the hoof at the top of the crack as deeply as you dare, for the purpose of disconnecting the other portions of the hoof on both sides of the crack at the top, and thus isolating the fissure within the segment of a circle, allow the new hoof to grow down sound. The other or third mode of using the firing-iron is to fire perpendicularly about one inch in length from the hair downwards, about one inch on each side of the crack; go as deep as you can with safety, for the purpose of making, as it were, an artificial sandcrack on each side of the true sandcrack, by this means overcoming the tension at the top, making three points instead of one point of expansion, and thus distributing the dilating force.

2nd.—Bandaging or binding with tarband, or tape and pitch, or strap. This method is defective from its getting continually cut off by the shoe of the other foot. It is also wrong in principle. To make it of any service it must be tight, and compress the whole circumference of the foot, causing pain and contraction.

3rd.—Cross-nailing (illustrated by a specimen foot). The defect of this method is the risk you run in puncturing the quick, although you make the hole with a pricker, or bore it with red-hot wire, and the fact that the horn is so liable to burst out, making bad worse.

4th.—Cross wires (illustrated by specimen foot). This method

has precisely the same objection as the cross-nailing, and the wire is too weak to be of any real service.

5th.—The strong wire claws or clasps (illustrated by specimen foot). This method is very ingenious, and is right in principle, but as in the last named, too weak to be of any real service; they spring open, become loose, and get lost; having such slight hold they rip through the hoof, and make bad worse.

6th.—Wingclips. These are of some service, but they can only produce their effect on the lower circumference of the hoof, not at the top. (Illustrated by specimen foot.)

7th.—The substitute for horn, or superadded circumference of hoof. Mr. Moore states in the *Veterinarian*, that sand-crack is the result of the hoof contracting and becoming too small for the internal structures, or else the internal structures enlarge and fill the hoof too tight, causing it to burst. He recommends that the *débris* in the fissure be removed, the fissure enlarged, and fill the space intervening with a piece of hard wood, with the object of keeping the crack expanded, and prevent the sides of the crack closing upon and pinching the internal lamina. This piece of wood he makes a fixture by boring a hole through it and through the hoof on each side of the fissure, and then passing a wire through all. He says that he has found this method to be very effectual. (Illustrated by specimen foot.)

8th.—The French mode of stripping off a quarter of an inch in breadth of hoof on both sides of the crack from bottom to the top. This method enables the new horn to grow sound, and is highly recommended.

9th.—The iron band encircling the entire foot, meeting in the front, where the two ends of the iron band are brought nearly together by means of a screw. This method is defective like the tarband; it compresses parts that want no compression, and have only a slight power in drawing together the crack.

10th.—The strong iron clasps. These I lay claim to as being my own contrivance. They are on the same principle as the wire clasps, but having four or six times the strength. They are made from flat rod iron five eighths of an inch broad by one eighth of an inch thick, bent at each end about three eighths of an inch, and hooked in a little, this hook or catch being the full width of the iron, and sharpened a little. I have a firing-iron of a new form to make two holes in the hoof, about an inch from each side of the crack and about an inch below the hair. I place the two catches of my clasp in these two holes, and with a powerful pair of pinchers made for the purpose I grip the clasp, and tighten it to any degree I think proper. These clasps cannot be made to spring out; they will remain a fixture until they grow out at the bottom; having a good substantial hold on solid sound hoof, they

cannot rip out; they can be tightened if they become slack at any time. I consider them infinitely superior to any other method ever resorted to to secure sandcracks. They can be employed with perfect safety. The firing-iron is gauged so that it cannot burn too deep. It is made to burn three eighths of an inch deep, or less as required; and when we remember that the average thickness of the hoof of a cart horse at the toe of the hind foot is half an inch, and often three eighths of an inch thick, there is ample thickness and to spare. At the quarters of the fore foot I find the average thickness is about three eighths of an inch. I always fill up the crack with a cement of pitch one part and gutta percha two parts, to keep out the wet and dirt. (Illustrated by specimen foot, firing-iron, and pinchers.)

I have given you the above method of treatment most freely as the result of my own personal observation, and if it proves in ever so slight a degree a benefit to my professional brethren my object and my sincere wish will have been fully attained.

A long discussion ensued.

Mr. Ison also read the following paper on a case of "Embolism of the Iliac Arteries:"—

On the 19th of September I was requested to attend at the Atherstone Kennels on the following Monday, to examine a seven-year-old bay entire horse, called *Astorius*, who had fallen lame behind in a strange manner on the two last occasions of his having been at exercise, during which time he showed great pain and distress.

I attended, and had the horse taken out of the stable for examination. When first led out he appeared to be in perfect health, jumped about and kicked playfully, and when run down the yard moved perfectly sound. I then put a groom on him and had him taken into a small paddock of about an acre in extent, and trotted quietly once round it, and then slowly cantered twice. During the second gallop there was manifest loss of action and power in the hind limbs. His legs were rather dragged instead of being energetically brought under the body. He was at once stopped and the man ordered to dismount; he seemed, however, perfectly unable to stand still, and presently was covered with a profuse perspiration over the whole of the body except the hind quarters, which remained cold and dry, more especially the off one, throughout.

The horse's action now was most peculiar; the legs were abducted and thrown out in a very strange manner, and the testicles were quite withdrawn from sight. The horse rapidly became worse, more restless, and more distressed,

knuckling over with his hind fetlocks, more especially with the off, the perspiration running off the whole of the body except the quarters.

I stated my opinion that the horse would never hunt again, and as I had no doubt he was suffering from embolism of the iliac arteries, an exceeding rare disease, I suggested that I should write to Mr. Cartwright, of Wolverhampton, to meet me in consultation on the case. I then put the horse into a box and gave him an anodyne, intending to further confirm my opinion by making an examination per rectum; but he became worse so rapidly, and plunged to such an extent, that I dare not attempt it. His distress was now the most intense I think I ever saw; the loss of power behind was very apparent, and several times he fell on his belly with his hind legs abducted in a spread-eagle manner. In about an hour paralysis of the hind legs ensued, and the horse died.

The following morning I made a *post-mortem* examination. I first examined the abdominal rings, to satisfy myself that there had not been any inguinal hernia. The testicle on the off side was rather darker than the other, and there was rather more serum in the scrotum, but in other respects it was healthy; I could not but notice the pallid colour of the muscles of the haunches for a horse in good condition, they were quite clay coloured. On opening the abdomen, the stomach and bowels were found healthy, and on removing them the immediate cause of death was apparent, as the diaphragm was ruptured its whole length. I then traced the posterior aorta to its bifurcation into the iliacs, which I found completely plugged with lymph; on the off side there did not appear to be the slightest canal through which blood could pass, on the near side the vessel was not entirely plugged.

The horse had been hunted regularly, carrying the huntsman or first whip the whole of last season, doing his work well and not missing a turn till one day, nearly the end of the season, when he fell lame, and showed great pain and distress, but on being stopped he rapidly got better, and was apparently quite sound and well by the time he reached his stable. He did no more work, but was sent with the rest of the stud to Tattersall's, and was bought in at 105 guineas, being the only one bought in. During the summer he was in a loose box, and apparently did very well till sent to exercise in conditioning time, when he fell lame in the manner described.

The discussion of this paper was postponed until the next meeting of the Society, which was arranged to be held at Stafford, in the month of May, 1875.

Subsequently to the discussion on Mr. Greaves's paper a vote

of thanks to the retiring President brought the meeting to a close.

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE Quarterly Meeting of this Society was held in the Ship Hotel, East Register Street, Edinburgh, on Wednesday, Dec. 3rd, 1874.

Professor Williams, President, in the chair.

Present: Messrs. Robertson, Borthwick, Baird, Aitken, Cumming, Balfour, Black, Young, Balfour, junr., Johnston, and the Secretary.

Mr. Richard Rutherford, M.R.C.V.S. Edin., was nominated a member.

As office-bearers for ensuing year, Mr. Aitken, of Dalkeith, was elected President. Messrs. Baird, Black, and Young, Vice-Presidents. The Treasurer and Secretary were re-elected.

In reference to the case of ulceration of the mucous membrane of the mouth following an attack of influenza, mentioned at the last meeting, *Mr. Baird* stated that the horse had since died, and that the *post-mortem* examination showed that the case was one of leuchæmia or of lymphadenoma, very similar to that alluded to in Prof. Williams's last work on *The Principles and Practice of Veterinary Medicine.* The spleen was found enlarged, presenting the same appearance as that delineated in the frontispiece, only the cartilaginous deposits were larger and more developed. The mucous membrane of the mouth and fauces was studded over with numerous red or purple coloured ulcerated spots or patches, and this appearance, though to a less extent, could be traced on the membrane throughout the alimentary canal. The various glands, especially the parotid, submaxillary, thoracic, and mesenteric, were hard and indurated, while the lymphatic vessels generally were thickened and enlarged, presenting a peculiar cord-like appearance, which, on such parts as the external surface of the heart, was very visible, and easily traced. Ossification of the right auricle of the heart had also taken place. The animal had been ailing more or less for a couple of years.

Prof. Williams had seen two or three such cases, which had exhibited a peculiar stiffness or rigidity of the muscles, more especially those of the loins and neck—a symptom not present in Mr. Baird's case.

Mr. Robertson had also seen a few similar cases, taking a considerable time to develop themselves, and characterised by gradual

wasting away and debility. He had also a rather singular case on hand at present—a horse, four years old, fed on the best of food, in fair condition, eating well and working well, but drinking excessively, and urinating in proportion. Had analysed the urine, and found a copious precipitate of salts of lime, probably mostly the carbonate, no albumen; but though he was aware that the presence of sugar in the urine of the horse was denied, he thought, but could not be certain, that he had found sugar, or something very like it. Some of the urine had been sent to an analytical chemist, and Mr. Robertson had received a report to the effect that there was no sugar, but a substance which had the same reducing action as sugar. The case was an interesting one, and would be watched.

Mr. Young then read a paper on "Some of the Diseases of the Digestive Organs." He began by stating that "Veterinary medical associations should be encouraged. They tend to an exchange of thought, by which we arrive at more extensive and correct knowledge of various professional subjects. They foster a spirit of mutual sympathy between members, and seem to link them together in the bonds of peace." After a sketch of the anatomy and functions of the organs, Mr. Young went on to say that he quite agreed with the opinion that the bad effects of kiln-dried oats was not the result of mere kiln-drying, but of their being overheated and mixed with sulphur to improve their colour. "Owing to the small size of the stomach of the horse, and the work he is called upon to perform, he would require to be fed on the most nutritious food, but how often do we see horses compelled to perform hard work on the coarsest fare. There are even some amongst our farmers who sell all the best of their produce, and keep the worst for their own horses." Boiled food was an error. Not requiring much mastication, it is imperfectly mixed with saliva, and the gastric juice has not the same effect on it.

In a case of indigestion from being fed on barley dust, in addition to the common symptoms, Mr. Young had seen partial paralysis of the off hind leg, which was deathly cold, the animal walking on the front of the pastern. With hot water to the leg, a little mustard, and a flannel bandage, and proper attention to the bowels, the animal gradually recovered. Acute gastritis rarely occurred unless under the influence of poison. He was rather sceptical as to Mr. Bollinger's theory of spasmodic colic, or that the intestinal congestion accompanying most cases is due to the stoppage of an embolism in the ramifications of the anterior mesenteric artery, and that in 200 horses there are 180 aneurisms. Enteritis Mr. Young considered the most painful disease the horse is liable to, and best combated by throwing the bowels into a state of repose by opium; bloodletting is advisable, succeeded

by hot water fomentations. Mr. Young touched also on rupture of the stomach, crib-biting and wind-sucking, stomach-staggers, parasites, hernia, calculi, volvulus, intro-susception, super-purgation, &c.

Commenting on the essay, *Mr. Robertson* quite agreed with Mr. Young as to kiln-dried oats. If the oats were in bad condition, damp, and musty, before being put in the kiln, and more especially if treated with sulphur, it was easy to understand the bad effects ascribed to them; but he could never see how the simple driving off the moisture from really good oats by moderately heating them on a kiln could do any harm.

The subject of parasites, Mr. Robertson stated, had been a very interesting one to him, and one to which he had lately given a good deal of attention, more especially as relating to sheep. He could not agree with Dr. Cobbold that tapeworm was rare among sheep. He could assure Dr. Cobbold that it was very frequently found among young sheep. As one instance, he had lately seen a lot of tup hogs, which, though grazed on rich meadow land and supplied with the best of artificial food, had done very badly, many of them having died, and on opening these it was quite common to find in the intestines tapeworms, along with a large number of strongles, which he (Mr. Robertson) considered still more dangerous than the tapeworms. No doubt there was a considerable number of filariæ in the bronchial tubes, yet it was quite evident from the symptoms and appearances shown that the presence of the tapeworms and strongles in the bowels was the primary cause of death. It was rather singular that the female portion of the same flock had kept almost free from disease. Though not supplied with such rich food, they had been kept more on the arable land, and this was one of many cases which strengthened his belief old pastures and natural grasses were the favourite habitat of the different varieties of parasites.

Regarding acute enteritis, Mr. Robertson wished to make a few remarks. He thought there was much in the pathology of the disease not understood. Looking at its excessively severe attack and short duration, the great enlargement and change of tissue produced, and exudation thrown out in so short a time, so different from the ideas we have been led to entertain of ordinary inflammation, he (Mr. Robertson) was glad to find that in Prof. Williams's work the idea had been broached whether the disease was really inflammatory in its nature at all. This, however, was too extensive a subject to enter on at present, and he would content himself by stating that he was quite in favour of treatment by opium. If any good could be done at all it was by such means. He considered that much harm was often done in many diseases of the bowels by giving cathartic medicines, and not allowing time for

the inflammatory action to subside. Constipation without inflammatory action will not kill an animal in a week, and the man who used opium and had patience would be more successful than one who had recourse to more "heroic" measures.

Other members were of opinion that the opium treatment might be carried too far. While admitting its efficacy theoretically and practically in cases where inflammation was more or less established, still in cases of severe indigestion, more especially from dry food, in which a speedy fatal termination was not improbable, they had found the best mode of treatment to be the free administration at once of purgatives.

Professor Williams said he was glad that the days of cooked food were about over. A horse's teeth were never made for it. They were made to chew his food, to allow it to be subjected to the action of the saliva in the mouth, whereby its starch was converted into sugar. This cooked food prevented, and though with care horses might do well enough on it, yet with its abolition many of the disorders of the bowels had disappeared. He quite agreed with Mr. Robertson's remarks as to parasites, and the treatment of bowel affections. His ideas regarding the latter had been the same for many years. He thought that many cases of indigestion succumbed more to the excessive pain than to any extensive inflammation of the organs, and that if opium were given to allay the pain, the bowels would through course of time relieve themselves.

With respect to the idea of aneurism of the anti-mesenteric artery being largely concerned in the producing of colic, by causing congestion of the vessels, he thought that those with whom it found favour seemed to forget that where an artery was plugged the result would be, not active congestion in its ramifications, but the opposite effect.

Votes of thanks were accorded to Mr. Young and the Chairman.

The next meeting will take place in February, when the members will dine together.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

The last meeting for the year 1874 was held at the Queen's Hotel, Leeds, on the 6th of October, the President, Mr. Broughton, in the chair; the following members were also present, namely :—Messrs. Naylor, James Freeman, Anderton, Patterson, Peter Walker, Scriven, Cuthbert, and Ferguson.

Messrs. A. A. Jones, 2nd Dragoons, and — Ragg, veterinary student, were present as visitors.

Messrs. Peter Ellis, and Robert W. Murdoch, of Leeds, were unanimously elected as members.

Mr. Naylor exhibited and described a very remarkable and large intestinal calculus which had come into his possession, and which he had recently presented to the Museum of the Royal College of Veterinary Surgeons. Other members also exhibited several interesting specimens of calculi. An animated discussion took place with regard to the composition and formation of calculi, and the diagnostic symptoms of their existence within the intestinal canal.

At the close of the discussion a cordial vote of thanks was given to Mr. Naylor for his kindness in bringing the subject before the meeting.

The election of officers for 1875 was then proceeded with. Mr. J. W. Anderton, of Skipton, was unanimously elected President; Messrs. Broughton, ex-Pres., John Freeman, and Patterson, Vice-Presidents; Mr. Cuthbert, Treasurer; and Mr. Broughton, Secretary.

It was arranged that the annual meeting and dinner for 1875 should be held on Friday, January 29th, when Professor Tuson, of the Royal Veterinary College, had engaged to deliver a lecture on "The Chemistry of Water in relation to the Health of Domesticated Animals."

J. H. Ferguson,
Secretary.

Veterinary Jurisprudence.

PROSECUTION AT NORWICH.—EXPERIMENTS ON ANIMALS.

The following is a report of proceedings instituted by the Royal Society for the Protection of Animals in respect to the experiments performed by Dr. Magnan, of Paris, during the course of the Norwich Meeting of the British Medical Association, in connection with his researches on the differential effects of alcohol and absinthe in high doses. This is a subject on which M. Magnan has made extensive researches, which have attracted much attention in France, and his visit to Norwich was with the object of bringing those results before the notice of the profession in England, and having them further discussed.

The Court was crowded by members of the medical profession, and influential gentlemen residing in the city. Amongst the medical gentlemen present were Dr. Copeman (President of the British Medical Association), Dr. Bateman, Dr. Eade, Mr. G. W. W. Firth, Mr. Cadge, Dr. Brownfield, Dr. Beverley, Mr. A. M. F. Morgan, and Mr. J. Allen.

The summonses were taken against Dr. Eugene Magnan, of Paris; Mr. Haynes S. Robinson, Mr. John Ballard Pitt, Mr. Richard Wentworth White, and Mr. Horace Turner, medical gentlemen residing in Norwich, at the instance of Mr. John Colam, Secretary of the Royal Society for the Prevention of Cruelty to Animals, for that they on the 13th August last, in the smoking-room at the Freemasons' Hall, in the parish of St. Peter Mancroft, in the said city and county of Norwich, did unlawfully ill-treat, abuse, and torture certain animals—to wit, two dogs—contrary to the statute.

Mr. Colam appeared for the prosecution, and Mr. Chittock for the defence.

Mr. Colam said that these proceedings were originally taken against Dr. Magnan, of Paris, and Messrs. Robinson, White, Turner, and Pitt, of Norwich, for an offence under the 12th and 13th Vic., cap. 92. In the second section the Act provided, that if any person should cruelly ill-treat, ill-use, or torture, or cause or procure to be tortured, any animal, for such an offence, he should forfeit an amount not exceeding £5. Those who aided, counselled, and abetted any such offence were principals. It was not his intention to exaggerate the evidence, but simply to state in a moderate manner the facts which took place, and, secondly, the application of those facts to the statute. Though these proceedings were looked upon as important, the issue was a simple one. In August last the British Medical Association held their meeting at Norwich, when an application was made to the committee by a gentleman that a certain experiment should be made upon dogs, this experiment to be the injection of alcohol and absinthe into the veins and blood-vessels. The committee, knowing what the result would be, took no action, but in consequence of the importunity of the gentlemen in question, certain individuals belonging to the committee, the defendants themselves, took action in the matter. These gentlemen knew perfectly well what the results of the experiment would be. One or more of them, in fact, went to Dr. Magnan, and told him that the experiments could not take place, as the results were already known to the profession. But, notwithstanding, one of the defendants did provide and manage for the use of a room for the purposes of the experiment, and put up a notice in the Masonic Hall, announcing that it would take place. The other defendants assisted at the experiments, or counselled, aided, and abetted them. On the 13th of August, in consequence of the announcement which had been made, several gentlemen were present in the smoking room of the Masonic Hall. Dr. Magnan and assistants were there. Dr. Magnan wore an apron that was

afterwards covered with blood. Who were his assistants was not known. A dog was brought into the room on a board, to which it was strapped or tied, with its back downwards and its legs extended out; in fact, if he might use the term, it was crucified. The animal struggled violently to free itself from its fetters. Its mouth was tied to prevent its expressing its sufferings, or biting. There were many medical men and many laymen present. Dr. Magnan then made an incision on the inside of the thigh. Wherever the skin of the animal is thinnest, there is the most sensation. He did not suggest that this thin part was selected in order to give more exquisite torture; it was generally selected because it was thought necessary there to make the incision for the purpose of inserting a tube in the femoral vein. Into that incision alcohol was injected. A great "scene" followed, that was to say, several gentlemen protested against the experiment, and a discussion ensued. Mr. Tufnell, whom he should call as a witness, well known as the President of the Royal College of Surgeons in Ireland, protested against the experiment. First of all he inquired what was being done; and, next, what was going to be done. Having learnt what was about to be done, he said it was a totally unnecessary operation, and downright cruelty. Dr. Haughton, of Trinity College, Dublin, also protested against the experiment as unnecessary and cruel. But notwithstanding these protests, it was decided by a majority of those present that the experiments should proceed. A second dog was then brought, tied like the other, into the room. It also struggled ineffectually to get away. An incision was likewise made in the femoral vein. Another discussion then took place; the tube or instrument with which the incision was made being in the meantime left in the wound. The end of that discussion was that the majority allowed the experiment to proceed. Absinthe was then injected into the wound. In the case of the first dog, the result of the injection of alcohol was an immediate struggle, which almost immediately subsided. The animal became dead drunk. In the second case, where absinthe was injected, the animal struggled much, cried as far as it was able, showed other symptoms of great suffering, and ultimately—no long after the injection—had a fit of epilepsy. It was not pretended that the dog suffered any further when seized with epilepsy. This was not a trial of the question of vivisection. The simple issue was whether this was an act of cruelty. If it caused suffering, was that suffering necessary or unnecessary? He should be prepared to show that it was totally unnecessary, and therefore cruel. Mr. Colam pointed out that for the purpose of ascertaining the effects of alcohol and absinthe upon the animals, it was not sought to administer it through the throat or the rectum; for, as would no doubt be contended, the injection of those spirits into the femoral vein was the more rapid method of producing the results. After asserting that the mere giving of an epileptic fit to an animal was an act of cruelty, and dilating upon the agonies the dog must have suffered between the injection of the absinthe and its seizure

with the fit, he asked what was the object of the experiment, and why was it performed? It was well known what effects alcohol and absinthe had when introduced into the human system; and he thought it was not contended for a moment that any service was to be done to dogs. Even supposing they could see that there was some little advantage derived, he would reply that the cruelty produced more than counterbalanced any little good which might be produced by the experiment. Mr. Colam further said, the result of the experiment was not calculated to produce any advantage, as the experiment should have been by the throat or the rectum. The insertion of this noxious fluid into the stomach was one thing, but inserting it into a vein was another; and he submitted that the analogy was destroyed by the mode in which this experiment had been performed. If it had been injected into the stomach, he was not prepared to say whether these proceedings would have been taken. He could not, however, say whether this would have been so or not.

Mr. Chittock then made several technical objections; but after some discussion, they were overruled by the bench.

Mr. Knight Bruce, of London—a non-professional gentleman who was taken to witness the experiments by Mr. Tufnell—described the mode of proceeding in highly coloured language.

Richard Ward, Inspector of the Royal Society for the Prevention of Cruelty to Animals, said that he saw Mr. White, one of the defendants, on the 9th of September, and told him he was an officer of the Society for the Prevention of Cruelty to Animals, and had come to make inquiries respecting some operations that had taken place at the Masonic Hall on the 13th of August. Mr. White admitted that he was one of the committee of the Association, and said Dr. Magnan had applied for permission to illustrate the effects of alcohol and absinthe on live dogs. He (Mr. White) told Dr. Magnan that they knew the effects that would follow, and that they were willing to take his word as to the results, without operating on the dogs. Dr. Magnan still wishing to demonstrate the effects, he (Mr. White) arranged for the experiment to take place in the smoking room of the Masonic Hall. He put up a board with a notice, stating that the experiment would be made. He was present at the operation, and afterwards went to Sir James Paget when the disturbance took place, for he considered it a great insult to Dr. Magnan, after being allowed to make the experiments. When the voting took place, he voted for the operation, as he did not consider it cruel, and was present at it. Mr. White said that when Dr. Magnan applied to him, the committee would take no action in the matter, as the results were well known. Witness also saw Mr. Robinson, one of the defendants. He also said he was present at the smoking room on the 13th of August, when he was requested by Dr. Magnan to fetch up a dog. He (Mr. Robinson) did not see the dog secured, but saw it directly afterwards, and was present at the operation, and voted for the operation to go on. Witness believed Mr. Robinson said he was

a member of the committee. Witness afterwards called on Mr. Turner, who admitted he had arranged for the dogs, and voted for the proceedings to continue, as he did not think there was anything improper. Mr. Pitt, witness afterwards saw, and he admitted he was one of the committee, was present at the operation, and voted for the proceedings to go on, as he did not consider them cruel.

Cross-examined by Mr. Chittock.—I am certain Mr. Robinson told me he was present at the operation. I made a memorandum of the conversation directly after leaving Mr. Robinson. I read my notes this morning. Mr. Turner told me that the results of the experiment were well known to the profession generally; but that he had never seen it demonstrated. I will not swear he said he was there the whole time. Mr. Pitt said he saw the proceedings, and he voted for the proceedings going on, for he had never seen the experiment demonstrated. On looking round the court, witness could not recognise Mr. Pitt; but he pointed to Mr. T. W. Crosse, saying he thought he was the gentleman he saw, but he would not be certain.

Mr. Thomas Joliffe Tufnell said—I reside at Dublin, and I am President of the Royal College of Surgeons in Ireland. On the 13th August last I was present at the Masonic Hall. I was on the way to the Hall, when a gentleman addressed me, and in consequence of what he said I went into the Hall, where I found a number of gentlemen. There was a long table, at one end of which was a white dog fastened down. I spoke to a gentleman near me, and said, "What is going on?" and he replied, "Dr. Magnan, of Paris, is about to demonstrate the effects of alcohol and absinthe when injected into the veins of the two dogs." I asked if there was nothing more, and the gentleman replied, "No." I said, "I think that is a cruel proceeding, as it is unnecessarily putting a poor devil of a dog to the pain that one is in." A gentleman opposite said, "That dog is insensible; he is not suffering anything." I said, "The dog is struggling hard to get free. I am a sportsman as well as a surgeon, and I will never see a dog bullied"; so I took a knife and cut the dog adrift, and he jumped upon the table. I said, "Now you see the dog is sensible; and I do not think this is a proceeding at all in character with the Association." I then left the room; but, in consequence of what a person said to me outside, I returned. An altercation then took place, and then Dr. Haughton, of Dublin, and several other gentleman, protested against it. A vote was then taken, and it was decided that the proceedings should go on. Dr. Magnan then came to the end of the table near where I was, and injected the white dog with alcohol, and it very speedily became insensible. A gentleman said, "Now you see he's insensible." I said, "Yes; and he'll never be sensible again, for he will die." On the contrary, however, Dr. Magnan said I should see it quite well at six o'clock in the evening. I replied, "No, no." Dr. Magnan then went to the other end of the table, and injected the red dog with absinthe. I saw the dog shortly afterwards, and it

was then seized with convulsions of an epileptic character. The incision was made in the first dog before I entered the room; and the dog was extended with the nozzle of an injecting tube in the femoral vein. His feet were tied out by tapes, and his mouth was secured. The white dog struggled as much as he possibly could, and I heard the suppressed sounds of crying which dogs make when in pain. It was a cruel thing, because it was unnecessary to make an experiment of that kind, for the experiment might have been carried out in another way less painful to the dog, and, in my opinion, more calculated to demonstrate, through the means of the lower animal, the influence of alcohol and absinthe on man, which, I believe, was the aim of Dr. Magnan. The other means was by throwing these fluids into the stomach through a tube, or, if a dog vomited, into the bowel by means of a tube, and so letting it enter the system. The effect of absinthe and alcohol is known on the human system, and I believe it is generally known by physiologists. I believe the analogy would be much greater if the alcohol were taken by absorption rather than by being injected into the vein.

After an adjournment for luncheon, Mr. Tufnell was cross-examined by Mr. Chittock. He said, Dr. Magnan is not known to me by reputation. I did not know him at the time. I have heard of him since. I never heard of him but in connection with this subject. I know him as a writer on this subject, but do not know what position he holds with respect to it. I have never seen experiments with alcohol and absinthe. I have never heard of similar experiments in this country. There are undoubtedly great results to be derived from experimenting upon the lower animals. A better result is likely to be obtained from a dog, from the fact of its having a more simple stomach—more allied to the human stomach—and, therefore, it is a more desirable animal to experiment upon. I have seen experiments on frogs, but they have been more especially for the instruction of students. These experiments are, galvanising the frog and viewing the circulation. These experiments cause no pain whatever; the animals are first decapitated, and the circulation goes on afterwards. I do not consider there is any cruelty in decapitation if instantaneously done. If done for amusement I should say it was cruel. I do not believe the introduction of a tube into the stomach would cause pain to the animal. The stomach is accustomed to receive a variety of things, but the vein only its particular fluid, and therefore the injection into the stomach by means of a tube would not cause pain. Witness knew the effects of absinthe from having partaken of it in the spring of 1854, when with Omar Pasha. He was told by the officers who used it that it produced violent drunkenness. He was not aware, before he saw the experiment, that it would produce epilepsy. This was upon the dog, but he believed the influence upon the individual, whether upon the soldier or the civilian, was violent, and not of an epileptic form of character; but the excessive use of this spirit might produce epilepsy. I am not aware that, owing to the experiments of Dr. Magnan, cases

which had been previously treated as apoplexy were found to be epilepsy, owing to the use of absinthe. I consider those experiments on the lower animals to be severe that are not necessary. Anæsthesia could not be produced in connection with the experiment, and, therefore, to a certain extent, it was severe.

It was stated in Mr. Taylor's *Medical Jurisprudence* that absinthe produced epilepsy. Sir James Paget was an eminent surgeon; but I say, if he went to be instructed by that experiment, he would not be an eminent physiologist. I have not written any works on physiology. Sir James has written several. There were about thirty gentlemen in the room at the time of the experiment.

In re-examination, *Witness* said,—Assuming that the experiment was necessary, he was of opinion that it was not done with a minimum amount of suffering.

By Mr. Wells—The cruelty consisted in opening the vein in the thigh. I do not consider there would be any difficulty in introducing the stomach-pump into the stomach of a dog. If I had a dog poisoned, I would have the pump used directly, though I have never seen the stomach-pump introduced into the stomach of a dog.

By Mr. Reeve—No anæsthetic could have been introduced into the dog, as the tendency would have been to destroy the effects of the operation.

Sir William Fergusson was the next witness. In answer to Mr. Colam, he said the injection of absinthe into the femoral vein would cause suffering in any animal, but how it would suffer it was impossible to say. The incision would undoubtedly cause pain. As to whether such an experiment would benefit science, Sir William said he was of opinion that it would not, as it was not likely that one person would inject absinthe or alcohol into the vein of another. It was his opinion that it would be an act of cruelty to fasten a dog down upon a board, to make an incision to insert a tube, and to inject absinthe.

Cross-examined—I have been professor of surgery at King's College. Professor Ferrier was also a professor at this college, and he was considered an able man; but I do not know whether he is in favour of these experiments. I do not know that he has experimented on dogs. I do not perform such experiments at King's College; but I believe they are performed for the instruction of students. I was not present when the experiment was made. I have never seen absinthe or alcohol injected into the veins of an animal. Before this experiment I did not know that absinthe would produce epilepsy, and I do not know it now. I should not be convinced by such an experiment. An epileptic patient might appear to be in great pain, and might be totally unconscious. I have seen cases of epilepsy brought on by excessive drinking in England and Scotland.

As a surgeon, do you consider yourself competent to give an opinion upon physiology?—I should consider a surgeon the best physiologist.

By Mr. Reeve—Do you know of any practical benefit to mankind which might result from such experiments ?—I have a very strong opinion that such experiments would not be of the smallest possible benefit.

Professor Pritchard, of the Royal Veterinary College, London, agreed with the opinion last expressed by Sir William Fergusson, and concurred generally that it would be an act of cruelty to submit a dog to an experiment in the way described by previous witnesses. In answer to Mr. Chittock, witness said he had castrated animals, but this was a necessary operation, as without it he was of opinion their masters would be unable to hold them.

Mr. Varnell, formerly Professor of the Royal Veterinary College, London, agreed with the previous witness, adding that all experiments were cruel, but this was unnecessary.

Mr. G. Fleming, veterinary surgeon, member of the Court of Veterinary Surgeons, and one of the editors of the *Veterinarian*, said his duty was with the foreign department of that journal, and his duties made him acquainted with the opinions of foreign physiologists, several of whom he named, who had drawn a distinction between the effect of alcohol and absinthe. From witness's knowledge he should say the experiment was unnecessary, and, therefore, a cruel one, as the results were already known. On being asked to produce an authority for this statement, witness said it was stated in the *Nouveau Dictionnaire* for 1864, that absinthe would produce epilepsy. The result was well known in France.

By Mr. Wells.—It is easy to pass the liquid into the animal's stomach by pouring it into its mouth without the aid of the stomach-pump.

Professor Haughton was then called on his subpœna, but did not answer to his name.

Mr. Colam informed the Bench that he had several other witnesses to call, but thought, perhaps, he had adduced enough testimony, and would leave the case in the hands of the magistrates.

Mr. Chittock then addressed the Bench in defence, first of all raising the technical objection that no proof had been adduced that the defendants were present at the experiments, or secondly, though charged as principals, no proof had been shown in support of that fact, or even that they had aided in any way in causing the alleged cruelty. He contended that the summonses only held good in the case of Dr. Magnan, who performed the experiments.

The Bench adjourned to consider the points raised; upon their return into court,

The Mayor said—We think there is no case against Mr. Pitt and Mr. White. We should like to hear you, Mr. Chittock, with regard to the other defendants.

Mr. Chittock said he thought this would be the proper time to ask for an adjournment.

The Mayor then announced that the case would be adjourned till eleven o'clock next morning.

The hearing of the case was resumed on Thursday morning.

Mr. Chittock addressed the magistrates on behalf of the two remaining defendants. He said he should prove that the defendants were not present, and therefore the case must be dismissed.

Dr. Beverley said he made arrangements for the dogs to be supplied for the purpose of the experiments, and considered experiments justifiable, espècially at a congress of medical men. The results tend to prevent people drinking absinthe.

Dr. Bateman said that before these experiments were made, he did not know that absinthe would cause epilepsy. The experiments were quite justifiable, and great good would result, especially as the subject of epilepsy is now more than usually engaging the attention of physiologists. Any experiments calculated to throw light upon the disorders of the cerebral functions must lead to beneficial results.

Dr. Eade said that, considering the occasion, also that it wasa very great fact which Dr. Magnan sought to demonstrate, and further, considering that the operation need not be a severe one, he expressed his opinion that the experiment was justifiable. The use of absinthe was increasing; a wine merchant's circular was sent to him the other day, containing quotations of absinthe. The experiments showed that absinthe was a dangerous diet, although he knew, before the experiments were made, that it would produce a violent form of drunkenness, and that its continual use would cause decay of the brain.

Dr. Copeman, President of the British Medical Association, said —He did not protest against the experiments being made, although he did protest against the presence of laymen. He thought that experiments were justifiable and necessary. From them he learned the fact that absinthe will produce epilepsy, which fact would be of great service to medical men, and would also tend to the non-employment of absinthe in the distillation of whisky, which he believed was the case in Scotland. In cross-examination he said he was quite certain that epilepsy was produced by absinthe, and but for these experiments he might not have believed it. He did not think the experiment need ever again be repeated in England. He repudiated as strongly as any one the infliction of unnecessary cruelty upon animals, and he wished the Society, instead of taking up a case of this kind, would turn its attention to cases of cattle being beaten and knocked about in the market of Norwich. He did not consider the experiments cruel, but he stopped them because there were those present who did not understand them. He believed that good would be produced in many ways by the experiments.

Mr. Cadge said he went into the room with Sir James Paget, who was appealed to by Mr. Knight Bruce to put a stop to the experiment, because it shocked his feelings as a British sporstman. Sir James looked at the dogs, and said he was not a sportsman, but the dogs were fully and perfectly insensible, and the experiment, so far as he understood it, was of a nature calculated to teach a

lesson most important and useful to man, and that, compared with the general run of operations and experiments, this was not a cruel one; that it was done with a high and worthy motive; whereas the sportsman probably killed and mutilated birds and animals for his own pleasure. Witness fully concurred in that opinion; he believed that increase of knowledge, both of medicine and physiology, would result from the experiments. The experiments having been performed before a number of highly respectable men, it would not be necessary to repeat the experiment.

Mr. W. P. Nicholls said that, as an operative surgeon and a student of physiology, he believed Dr. Magnan's experiments to be both proper and right and not cruel.

Mr. Firth said that the results of these experiments would tend to enlarge the field of information on the physiological action of alcohol and absinthe. The information imparted by the experiments was not before generally known to the profession.

Mr. Allen said he was present when the experiments were performed. The operation was beautifully performed. He did not see either of the defendants in the room at the time.

Mr. Nockall, a dispenser employed by Mr. Robinson, also proved that that gentleman was not in the room.

Mr. Smith, veterinary surgeon, who supplied the dogs, said he considered vivisection barbarous and cruel; but he believed the dogs could not be harmed, or he should not have supplied them. He saw the experiments, and was not at all sure that a fit of real epilepsy was caused by absinthe. One dog died, and the other recovered, and was as well as ever next day.

The magistrates dismissed the case, as it was not proved that the defendants took any part; but they thought it a proper case for the Society to prosecute. Costs were disallowed.—*British Medical Journal.*

ROYAL COLLEGE OF VETERINARY SURGEONS.
(EXAMINATIONS.)

At the several Meetings of the Court of Examiners of the Royal College of Veterinary Surgeons, held on Dec. 17th, 18th, 19th, and 22nd, the following Students of the Royal Veterinary College passed their "First Examination":

Messrs. Webster Powell; Alfred Sants; Alfred Hoole; Hamilton James Kelly; James Scrivener Payne; Henry Beard; Francis Raymond; Thomas Williams; Peter Lawler; Harry Samuel Mullinger; Andrew James Milne; George Hugh Robert Wilkins; Albert Douglas Drake; Alfred Glover; Fred. Hewson; Ernest Rivett; George Goodacre; Harry Watson Talbott; Walter Lodge; Frederic Joseph Pyatt; Robert Ward Jenkinson; Montague Miles Rock; Henry Jennings; William Henry Hughes; William Wilkinson Smart; and Harry Lowe.

The following also passed their "SECOND EXAMINATION" on Dec. 21st, and obtained the diploma of the College:

Mr. Arthur Bostock . . .	Mossley, Manchester.
— Luke Drummond Moutray .	Kilmainham, Dublin.
— John Dennis Edwards .	Cleethorpes, Great Grimsby.
— William Thomas Clark .	London.
— William Thomas Gooseman .	Great Grimsby, Lincolnshire.
— Thomas Henry Merrick .	Northampton.
— Charles Concanon . .	Tuam, County Galway.

At a Meeting of the Court of Examiners of the Royal College of Veterinary Surgeons, held in Glasgow on Dec. 22nd, the following Students from the Glasgow and Edinburgh Veterinary Colleges passed their "FIRST EXAMINATION":—Messrs. George Kidney, Aimé Gautray, Robert Heap Cartwright, Robert Cowan, Joseph Harper Hutchin, and Daniel John Lyons.

The following also passed their "SECOND EXAMINATION" on Dec. 23rd, and obtained the diploma of the College:

GLASGOW VETERINARY COLLEGE.

Mr. Alexander McConnell .	South Alloa, Clackmannan.
— Robert Archibald . .	Dalry.
— John Thomson . .	Glasgow.
— Duncan Marquis . .	Patrick, Glasgow.
— Thomas Drummond . .	Ballynure, Belfast.

NEW VETERINARY COLLEGE, EDINBURGH.

Mr. Michael John Tracy . .	Mountrath, Queen's County.
— John Mitchell Stewart .	Edinburgh.
— Wm. Joseph O'Sullivan .	Cork.

OBITUARY.

WE regret to have to record the death of Mr. Harry Bird, M.R.C.V.S., Bolton-le-Moors. Mr. Bird was a very young member of the profession, having only obtained his diploma at the December examination, 1873.

We have also to add to this the early death of another recently incorporated member of the profession, Mr. James Dobbyn Adams, Cork. His diploma bears date December 20th, 1872.

THE

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Communications and Cases.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 5.)

We have now arrived at that group of plants surrounding and including the Roses, consisting of:—

Rosales—The Rosal Alliance.

Diagnosis.—*Perigynous exogens, with monodichlamydeous flowers, distinct carpels, sutural placentæ, definite seeds, corolla, if present, polypetalous, and an amygdaloid embryo with little or no albumen.*

Professor Lindley says—"Rosals touch Ficoidals by Sanguisorbs, and Saxifragals by Roseworts themselves, for the genera of the latter have not unfrequently been confounded by even good botanists with those of Saxifrages. The small embryo and albumen of the latter offer, however, a clear mark of distinction."

The alliance, which is a very large and comprehensive one, has a wide range of subjects, consisting not only of a larger list of genera and species, but these have such capabilities of running into varieties that the different sorts of any one of its natural orders can be almost indefinitely multiplied. The following names of orders will be sufficient to point out their importance, and at the same time we append a short ana-

lysis of the distinctive characters of such as we shall more fully describe:—

Natural Orders of Rosals.

1. Fabaceæ.—*Leguminous plants. Flowers polypetalous (or apetalous), papilionaceous or leguminous. Carpel solitary, with the style proceeeding from the apex of the ovary.*

2. Drupaceæ, Almondworts.—*Flowers polypetalous, regular, drupaceous. Carpel solitary, with the style proceeding from the apex of the ovary.*

3. Pomaceæ, Appleworts.—*Flowers polypetalous, regular. Carpels adhering to the calyx by their back.*

4. Rosaceæ, Roseworts.—*Flowers polypetalous. Carpels free from the calyx, and quite or nearly so from each other.*

5. Sanguisorbaceæ, Sanguisorbs.—*Flowers apetalous. Carpel solitary, enclosed in a hardened calyx-tube, forming a false pericarp.*

Leguminous plants are for the most part characterised by fruits consisting of single pods called *legumes*. These by some authors are called papilionaceous plants, from their flowers resembling the hue and form of the papilio or butterfly.

Whether we look to the flower or the fruit, we shall find that the order is an exceedingly natural one, notwithstanding some of its members are the small herbs represented by our own clover allies, while others make the largest trees known in the world.

Professor Lindley, speaking of the locust tree, says—"The size of the timber is sometimes prodigious. The locust trees of the West have long been celebrated for their gigantic stature, and other species are the Colossi of South American forests. Martius represents a scene in Brazil where some trees of this kind occurred of such enormous dimensions that fifteen Indians, with outstretched arms, could only just embrace one of them. At the bottom they were eighty-four feet in circumference and sixty feet where the boles became cylindrical. By counting the concentric rings of such parts as were accessible he arrived at the conclusion that they were of the age of Homer, and 332 years old in the days of Pythagoras; one estimate indeed reduced their antiquity to 2052 years, while another carried it up to 4104 years, from which he argues that the trees cannot but date far beyond the time of our Saviour."*

The importance, then, of an Order capable of affording us

* 'Vegetable Kingdom,' p. 551.

so many herbs, fruits, vegetable products, and timber, can hardly be over-estimated. It is not only one of the most extensive but the most useful, but more generally distributed than almost any other.

The following table will give more an approximation to the distribution of the Leguminaceæ:

Europe, with the exception of the Mediterranean	184
Siberia	129
United States	183
China, Japan, and Cochin-China	77
Levant	250
Basin of the Mediterranean	468
Canaries	21
Arabia and Egypt	87
Mexico	152
West Indies	221
East Indies	452
Equinoctial America	605
Equinoctial Africa	130
New Holland	229
Isles of Southern Africa	42
South America, beyond the Tropics	29
Cape of Good Hope	353
South Sea Islands	13

This allocation makes out nearly 4000 species as having been tabulated, but there is reason to think that they are far more numerous. We have nearly eighty native species, of which the furze, broom, vetches, and wild peas are the most conspicuous.

Our trefoils and medicks are not only pretty and interesting, but many of them most useful.

The furze, *Ulex Europæus*, of our commons, though so abundant, is yet a most interesting plant. It is conspicuous for its bright yellow flowers, and indeed is one of the few of the order that has the capability of producing double flowers, and thus the double-flowered variety is often a showy plant in the shrubbery.

But the wild plant, flowering as it does at all seasons of the year, gives a charm to English commons and hedge-rows not possessed in the same degree by any other native plant. This has given rise to the following distich:—

> "When the furze is out of bloom,
> Then kissing's out of tune."

This plant is of interest, too, from the fact that its leaves are, as it were, transmuted into spines; in order to see the nature and development of which it would be well for the student to take a few seeds of gorse or furze, and plant some in a small flower-pot, when first its cotyledon leaves, then

the bifoliate leaves, with a point at the tip of the petiole, which afterwards marks the apex of the spine; branches, buds, and leaves, are all spinose, and only a slight indication of leaves is left in the stipula, which indeed are nearly always spinose, so that we behold in the furze a shrub whose every part may be said to present evidence of developmental metamorphoses.

But again, as showing the interesting action of this principle, let the student examine a specimen of the Lathyrus aphaca. Should he grow it from seed as recommended in the case of the furze, he will see that its early leaves are bifoliate, but in the next lot of leaves the tendency will be in the direction of the production of tendrils, and no sooner are the true leaves diverted to form tendrils than the stipula enlarge, take on the dignity and perform the functions of leaves. If, too, we examine the *Lathyrus nissolia*, the grass-like vetchling, we have a plant with flat flaggy leaves like those of the grasses which perform the leaf function while the stipules are but mere points.

Indeed, the endless varieties of modifications of parts in the Leguminaceæ, if properly studied, will acquaint us why they are so nearly related to the Rosaceæ; notwithstanding, at a superficial glance, the flowers and fruits are so dissimilar, it is this which makes the study of the morphology of plants, and especially of the Leguminacæ, so interesting to the vegetable physiologist. The Order is especially a valuable one for its three groups of plants which have been allocated on account of their useful properties as follow:

1. Papilionaceæ.—Herbaceous plants used as garden esculents; hence the wonderful varieties of beans, peas, and kidney beans of the horticulturist, to say nothing of the numerous ornamental plants of the florist.

2. Cæsalpineæ.—Such trees and shrubs as the Tamarind, Locust tree, and Sennas, many of which are known for their purgative and other useful properties. In the Tamarind the fruit is slightly laxative, while the locust beans are well known for their feeding qualities.

3. The Mimosæ.—Of these Professor Lindley says—"Astringency in the bark, and the production of a sort of gum in the same part, is the great characteristic of this tribe. Of gums, *Acacia verek* and Adansonii yield gum Senegal on the west coast of Africa; *A. nilotica* and *Seyal*, gum arabic in Nubia; something similar is produced in New Holland by *A. decurrens* and the silver and black wattles (*A. mollissima* and *affinis*), and in India by *A. arabica* and *speciosa* and *Vachella Farnessiana*."

The uses of gum arabic and its allies are well known; and, in fact, the whole tribe is of great value, contributing perhaps more than any other order to such important uses as food, medicines, useful wood, and ornamentation.

TYPHOID FEVER IN PIGS.

By Thomas D. Broad, M.R.C.V.S., Bath.

This fatal disease has been prevalent in the neighbourhood of this city for some time past, and I have been consulted by several persons in reference to it. Among these cases was the following:

On December 16th last I was requested by a miller to go into the country and examine into the nature of a disease which had broken out in a herd of 120 pigs; the cause of which was assigned to the meal supplied by the miller in question.

It appeared that a baker, on November 27th, 1874, bought of a dealer forty-seven pigs about six months old, some of which had been in his possession three weeks; others of the lot were bought of a gentleman near Bath, and the remainder are reported to have come from Berkshire. The reasons for supposing the meal to have been the cause of the deaths were that the pigs appeared to be healthy for the first week after purchase, during which time they were fed on food which had been on the premises for some time, and that the disease began to show itself three days after they had been fed on the meal supplied by the miller.

December 6th.—Some of the pigs refused their food, and were very thirsty. They appeared to be sick; and also suffered from diarrhœa, the discharges being of a dirty yellow colour. Red patches or spots likewise showed themselves on the skin of the majority of them. The first death occurred on December 7th, and in a few days afterwards as many as seven died in one day. As soon as the disease was observed the meal, the supposed cause of the malady, was discontinued, and a portion of it, with the viscera of one or two of the pigs, was sent to Mr. Ekin, an analytical chemist at Bath, for examination. Mr. Ekin reported that he could not detect anything of a poisonous character in the meal. The disease continued to progress; and in other sties, near the affected animals, were about seventy fattening pigs, which also soon began to show symptoms of the disease. They

were immediately killed and dressed, and I fear sent to the market and sold, with many of the smaller pigs, notwithstanding the spotted condition of their skins.

I made *post-mortem* examinations of several of the young pigs, and also of those which were being fattened. In some cases the skins of those which died were as red as though they had been painted over; in others the redness varied from large diffused patches to simple spots. The mucous membrane of their stomachs also differed in the extent of its pathological condition. In some cases it only showed patches of congestion, but in others ulceration existed, the ulcers being more or less covered with thick layers of effused lymph. The ileum and cæcum were in the majority of cases more or less ulcerated, and in some of the animals these lesions were visible through the serous membrane. In a few cases there were large patches of thick and tough membranous-like deposit around the ulcers, as well as layers of more recently deposited lymph covering them. Complications existed in many of the cases, such as more or less consolidation of the lungs; slight patches of ecchymosis; congestion of the liver, laryngitis, &c.

Subsequently to the occurrence of these cases (viz. on December 31st) I was requested again to go into the country and examine some more pigs which formed a part of a lot of eighteen that had been bought in Bath Market on the 19th of December, one of them having died on the day following the purchase. When I arrived eight were dead. I examined the viscera of all of them, and found the morbid appearances to be precisely like those observed in the pigs previously alluded to. By the 7th of January the whole of them were dead. On 9th January I forwarded the viscera of two of them to Professor Simonds, who confirmed my view of the nature of the disease, and asked me to keep him informed of the further progress of the malady.

In 1865 Dr. W. Budd and Professor Simonds published an excellent report of this disease in the *Veterinarian*, and since that time several other accounts of it are to be found in the same Journal. Nevertheless, I find that some members of the profession seem to be almost entirely unacquainted with the malady.

[We are indebted to Mr. Broad for having sent us several specimens of this interesting disease, some which he was only enabled to procure by exhuming animals which had been buried several days. There is, we fear, a risk of typhoid fever becoming prevalent among pigs in other parts of the

kingdom, as communications relating to its existence have come to hand from some of the midland counties.

In 1865 the disease assumed quite an epizootic form, and the losses it occasioned were very large.

The report alluded to by Mr. Broad was extracted from the 'Journal of the Royal Agricultural Society,' in which it had originally appeared, Dr. W. Budd, of Clifton, having brought the subject at that time prominently before the Council. His valuable paper was illustrated with some excellent woodcuts of the diseased intestines. We would earnestly recommend the perusal of this paper to our readers.]

ON THE TREATMENT OF SANDCRACK.

By the Same.

As anything which emanates from the pen of Mr. Greeves, as an old and experienced member of the profession, if not sound in practice, is likely to mislead younger members, I venture to make a few remarks on his paper on sandcrack which appeared in the January number of the *Veterinarian*. I would first observe that I never saw a case where it was necessary to bleed, neither have I seen a case of suppuration, sloughing of lamina, caries, or fungus, unless there had been bungling interference by opening the crack with a view of giving relief, which was the ordinary practice of myself, and, probably, also, of the profession generally some thirty years since. I cannot imagine that any person ever supposed that the clips on either side of the toe of the shoe were so placed in order to hold the foot together, but, on the contrary, to supply the place of the ordinary toe clip. A high-heeled or patten shoe is not merely improper, but bad in the extreme. The objection to clasps, whether small or large, is that great danger exists of their being trodden off by the other foot. I have never seen any good to follow the application of the firing iron in any form. The majority of cases of sandcrack which come under notice for treatment are those which occur in the toes of the hind feet of heavy horses. They do not arise as effects of dryness, or defects of the horn itself, for, on the contrary, they occur generally in the thickest and strongest of hoofs, which are defective in shape, being mostly very upright, so that when the horse is shod with high caulkings, and put to excessively heavy pulling, the

front part of the hoof gets more strain upon it than it can sustain, the result being a fracture of the horn.

Treatment.—If my patient be lame I put on immediately a bar-shoe fitted full at the toe, with a clip on each side, but having no bearing opposite the crack. The shoe is fitted long and made thin at the heels, the object being to enable the horse to bear his weight on the heels, which he endeavours to do, and can do better in this shaped shoe than with any other, or even when without a shoe. I order the constant application of cold water to the coronet, as horses are so apt to kick poultices off their hind feet, or quickly wear a hole through the bag, leaving the part dry and doing more harm than good. I give physic, and in nine cases out of ten I find that in a few days my patient is free from lameness. I then adopt a practice recommended to me by my brother about twenty years since, and which he tells me he has followed with perfect success up to the present time. It consists in cutting a notch with a drawing knife about half an inch from each side of the crack, as near the coronet as possible, and about a quarter of an inch deep, sufficiently large to allow of the embedding of the heads of small horse-nails. If the crack be a long one, I cut two other grooves an inch lower down; I then have horse-nails prepared in the ordinary way as for driving, with the exception that each is pointed on the reverse side to prevent puncturing the quick, a case of which I never had, as I never make a hole with a pricker or bore it with a red-hot wire, neither have I ever known the horn to burst or break away. Before being used the nails are put in the vice and the head hammered to form a shoulder to prevent their being driven too far into the wall and breaking out the hold. After being carefully driven through the notches a long clench is left, the crack is then drawn closely together with the pincers, and all made smooth with the rasp to prevent its being trodden out. I then order hoof-dressing to be applied daily, and continue the use of the bar-shoe until the hoof has grown sound from the coronet.

PARALYSIS IN A MARE.

By Charles Paton, Army Service Corps.

I am not aware that the occurrence of Sir C. Bell's paralysis in the horse is mentioned in any of the English works on veterinary practice, and perhaps you may deem an account of the best marked of three cases which have come under my notice within a year in this city of sufficient interest to set before your readers.

The subject of the disease was a troop mare seven years of age, reputed a good worker, although she always carried her head low, hung on the bit, seemed silly and head shy. She travels up and down hill well, is good at a dead pull and holds herself in the breeching rightly, but blunders on level ground even when it is free from loose stones or the least uneven on the surface. The mare was shown to me the day after she was said to have been kicked, when there was no sign of injury to the skin, and no swelling, but simply a difference of expression of the two sides of the face caused by loss of motor power of left aural, palpebral, and superficial facial muscles, notably of the buccinator. The ear hung pendulous and could be swung in any direction without the muscles offering any opposition, the eyelids were wide apart and the finger placed on the eyeball induced no attempt at contraction of the orbicularis palpebrarum; the tears flowed over the cheek, the relaxed buccinator allowed the angle of the mouth to fall, and the lips were drawn to the opposite side. There was no loss of sensation, the muscles of the eyeball retained perfect power, the pupil contracted and dilated on the application and withdrawal of light, the masticatory power was good; there was no paralysis of the tongue; the real trouble seemed to be the difficult collection of water and food, for if the mouth was not immersed in the water almost to the eyes, or if the head was elevated during the act of drinking the water escaped at the angle of the mouth; the taking of food could only be accomplished by the animal rubbing the oats, bran, &c., into such a position as to enable the tongue, incisors, and normal side of the mouth to act in conjunction with the manger or other opposing surface in overcoming the difficulty. The condition of the mare for obvious reasons was below par; she had a ravenous and depraved appetite, devoured all her bedding litter, her own and other horses' fæces whenever she could obtain access to them, and frequently filled her mouth

with the turf mould which was substituted for straw bedding.

In addition to the foregoing symptoms there was decided inability to extend the left fore leg out of the way of the advance of the right one, and though she retained opposing power of the coccygeal muscles, the tail was frequently and markedly carried towards the right side.

Comparing these phenomena with the excellent description of Sir C. Bell's paralysis, in Sir J. Watson's practice of medicine, I diagnosed the case to be due to some morbid condition causing "suppression of the function of the *dura portio* of the seventh pair of cerebral nerves."

From the foregoing description a scientific reader would imagine that the defect would be patent to the most casual observer, nevertheless this animal realised £24 as a cast trooper and was warranted sound on resale for a larger sum, but as the awkward method of feeding, &c., soon displayed itself, an action was instituted, in which I need hardly say the guarantor was cast, notwithstanding his plea that he was instructed by a veterinary surgeon that he might warrant the animal.

These cases are not amenable to treatment (unless, as very rarely happens, they are due to external causes), especially if complicated with degeneration of the brain or spinal cord. The symptoms have never been more than slightly and temporarily modified by any plan of treatment which I have adopted, so that its relation would serve no useful purpose.

The danger to life seems nil, and the cases are more curious than frequent, at the same time it behoves veterinarians to be aware of even the slightest indication of the existence of this neurotic derangement, whose presence may not be so pronounced as to ensure detection.

REVISED LIST OF ENTOZOA, WITH NOTES AND REFERENCES.

By T. Spencer Cobbold, M.D., F.R.S., F.L.S., Professor in the Royal Veterinary College.

(*Continued from* p. 890, vol. xlvii.)

In order to complete the list of tapeworms, there yet remain to be noticed a few more canine cestodes, after which I shall pass on to describe the various bladder worms proper

to mankind and animals. Although these singular parasites are one and all of them merely larval stages of tapeworms, most of which I have already catalogued as such with their adult forms; yet their semi-independent mode of existence, and the separate diseases they produce, sufficiently entitle them to be considered apart. Practically, their significance in the eye of the professional man is just as important as any of the adult forms they happen to represent. In all cases, where the full-grown worm is already known to science, the genetic relations will be carefully pointed out.

23. The Tawny Tapeworm (*Bothriocephalus fuscus*), This species was originally described by Krabbe, who found the worm on five separate occasions in the intestinal canal of Icelandic dogs. This worm resembles the cordate species in the general form of the head, but differs in respect of the characters presented by the proglottides and sexual organs. Dr. Krabbe recognises three distinct varieties of the worm; these being (1) the *B. fuscus* properly so called, (2) the reticulated tapeworm (*B. reticulatus*), from the circumstance that the calcareous corpuscles at the surface of the segments group themselves in such a way as to present the appearance of a network; and (3), the doubtful tapeworm (*B. dubius*), in which the segments, at different lengths of the body, present all sorts of unusual characters. Near the head the joints are simple, further down they present an appearance of splitting, each segment representing two in one, whilst towards the tail these lines of demarcation become more and more feeble, until at length they, as well as the ordinary borders, altogether disappear. In other worms, the segmentation resolves itself into a mere series of folds.

The shortest of all these tapeworms measured about the third of an inch, whilst the longest attained a length of rather more than four feet.

Illustrations.—Figured by Krabbe in his beautiful memoir ('Helminthologiske Undersoegelser, i Danmark og paa Island'), and also in the French edition.

24. The Deceptive Tapeworm (*Bothriocephalus decipiens*). This entozoon, though apparently only a rare visitant of the cat, appears tolerably abundant in other feline animals. Two very young specimens, about a third of an inch in length, were originally discovered by Creplin in the small intestine of the cat at Griefswald. In the leopard, ounce, and other carnivorous animals, it has been found to acquire a length of four or five feet.

Illustrations.—Figured by Leuckart in 'Wiegmann's Archiv' for 1848.

25. The Beef Measle (*Cysticercus bovis*).—I originally gave both the English and Latin specific titles to this little bladder-worm, partly in order to distinguish it from the pork and mutton measles, and partly because I thought Leuckart's nomenclature, however distinctive in itself, inconveniently long. He describes it the *Cysticercus tæniæ mediocanellatæ*, thereby indicating the fact that the beef measle is, as I have before remarked (Revision, No. 15), the larval or cysticercal condition of the beef tapeworm.

The true source of this measle was first made evident by Leuckart in 1861, being confirmed by Mosler shortly afterwards. In the year 1865, and subsequently, experimental researches conducted at the Royal Veterinary College by Professor Simonds and myself, gave results which not only verified Leuckart's statements, but also added several important data to our knowledge in this respect. Quite recently further confirmation has been obtained by a repetition of these experiments by Professor St. Cyr of the Lyons Veterinary School.

The perfect beef measle ordinarily varies in size from the fourth to the half of an inch in length, but my cabinet contains a specimen nearly an inch in length. This was contributed by Dr. Joseph Fleming, who mentions having seen one which, when unrolled, measured nearly an inch and a half from end to end.

Although thousands of these bladder worms must exist in the cattle of England, yet up to the present time not a single instance has been recorded of its occurrence in the United Kingdom, except in those animals upon which we had experimented. Notwithstanding my inquiries, I have not yet found a single butcher or flesher or meat-inspector or veterinarian, who has encountered this parasite in any animal slaughtered for the market. Several butchers to whom I have spoken have denied their occurrence in meat sold by themselves. Even so late as June of last year, the presence of measles in the flesh of cattle was denied before an assembly of French *savans,* although, for years past I have exhibited measly beef and veal in the lecture room of the Royal Veterinary College. (See the discussion at the Société de Thérapeutique, recorded in the *Bulletin Gén. de Thér.* for June 30th, 1874, and also the *Journ. de Thér.*, No. 14, for July, p. 556, where, however, the special remarks on this head have been omitted); also see the *Lond. Med. Record* for July 29th, 1874, p. 472, and the *Lancet* for December, 1874, p. 794).

The presence of beef measles in the cattle of the north-

west provinces of India is extremely common, so much so that severe restrictions have been imposed upon the consumption of ration beef. The presence of a few measles in the flesh of cattle has been deemed a sufficient excuse for condemning entire carcasses, which have been buried accordingly.

The parasite is easily distinguished from the measles of mutton and pork by the fact that its head is not furnished with hooks, whilst in the place of a rostellum or proboscis there is a small centrally placed, retractile disk, which commonly assumes the appearance of a supplementary sucker or holdfast. The four lateral suckers are also of comparatively large size.

Illustrations and Literature.—A good figure is given in my 'Manual,' reduced from the original of Drs. Hewlett and Temperley Grey ('Bombay Health Officer's Report for 1870'). A general view of the cysticerci in the muscles is also given in the 'Manual,' (p. 26), and in my small work on 'Tapeworms,' (2nd edit., p. 36). This figure has also been copied in various publications (*e. g.* in Verrill's 'External and Internal Parasites," p. 75, fig. 55, from 'Hearth and Home,' where the figure is reduced). In Tommasi's Italian edition the original figures are more faithfully reproduced.

Professor Mosler gives two fine coloured plates representing the measles in the heart of his experimental calf ('Helm. Studien und Beobachtungen, 1864'), and one of these is copied in my 'Entozoa,' at p. 239. Leuckart has given numerous characteristic representations in his classical work ('Die Mensch. Par.,' Bd. I, pp. 408—412, figs. 121—126), and I have also figured one of the specimens originally reared by that *savant* in my 'Entozoa' (p. 40, fig. 52). Especially worthy of attention also are the figures of Lewis, one of which, representing a slice of roasted measly beef, is reproduced in the 'Manual' at p. 44. No less than eighteen other illustrations of measles are given by Lewis in his 'Report on the Bladder Worms found in Beef and Pork' (see Appendix B to the 'Eighth Annual Report of the Sanitary Commissioners with the Government of India').

In addition to the above there is the important article which appeared in the *Madras Monthly Journal of Medical Science* (see the *Veterinarian* for July, 1873, and also an article in the *London Medical Record* for June 4th, 1873). The more recent contributions to our knowledge of beef measles in relation to the question of our food-supply, and the superintendence of slaughter-houses and meat markets, will

be found summarised in the leading article of the *London Medical Record* (Nos. 93, 96, and 99), which has been reprinted in the *Veterinarian* for January of the present year (p. 28, *et seq.*), and in which also the statements and opinions of various Italian writers (Giacomini, Pellizzari, Tommasi, Perroncito, and Marchi) are given at considerable length. This by no means exhausts the extensive literature of this department of helminthology.

In addition to the illustrations of the adult worm already noticed (Revision, No. 15), I must not omit to mention the figures given by Dr. Welch in his recent elaborate paper in the *Quarterly Journal of Microscopical Science*. Admirable as the representation of the head of the worm is, the author does not indicate the presence of a central supplementary disk or holdfast. He speaks nevertheless of a "depression" in the centre. In fresh specimens, both of the measle and adult worm, the cup-shaped cavity in question is readily seen.

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CASES OF DISEASE OF THE HOCK-JOINTS SIMULATING PARAPLEGIA.

By "Recluse," V.S., Bengal Presidency.

The cases so ably reported by Mr. Litt in the *Veterinarian* for August as "Subacute Paraplegias" have for myself a peculiar interest, as I am and have been for some years convinced that the spinal cord in many cases of supposed subacute paraplegia is unaffected, and that in reality the impaired action is due to derangement of the hock-joint, chiefly affecting the articulatory surfaces of the tibia and astragalus. I therefore beg to offer you the result of my experience in like cases.

My attention was first called to this subject in 1858, when serving in the Bombay Presidency. The animals affected were supposed to be suffering from paraplegia caused "by a stroke of the land winds;" they were in such good health and spirits otherwise (one was and continued in training, running well in his engagements), that I could not believe that the nervous system was implicated, and after mature reflection came to the conclusion that the hocks were the seat of the lameness, though I could not decide in what part of the joint the disease existed.

In 1870 two horses were sent to me with the same sym-

ptoms, aggravated to such an extent the animals could scarcely stand; still, I could not reconcile the idea of their being paralysed with the fact that their general health was good, and they had marched a long distance (one had come twenty miles in the day). I fired both, which increased the pain to such an extent that they lay down almost continually, and experienced more difficulty in rising than before the operation; this, however, passed off as the counter-irritation subsided; one made a fair recovery, the other was much relieved for about six weeks, after that he began to fail again, and became so bad that he supported himself when standing by resting his hind quarters against the wall of the box; there was no loss of sensation, and he could lie down and rise at will. Sympathetic fever setting in I destroyed him, and discovered acute inflammation with ulceration of the articular surfaces of the tibia and astragalus.

In 1871 I fired two thoroughbred English horses—Garibaldi and Ethiopian—each suffering in the same way, but not so severely; the former was much relieved and was not destroyed till the end of 1872; the other was destroyed three months after, the operation having effected but a slight improvement in his condition. The morbid appearances of the hocks corresponded with those above mentioned.

In 1872 I fired a grey remount similarly affected as to his gait, with the addition of bog spavins. It gave slight relief and he was sold.

In 1873 a grey horse (Auril) was fired aud much benefited by the operation (he also became very fat); still, the effect was transient, and he was destroyed about two and a half months afterwards.

The *post-mortem* disclosed in the off hock—Inflammation of the grooves (with ulceration of the external one) of the tibia, and ulceration of the ridges.

Astragalus—Prominences inflamed, groove ulcerated.

Near hock—Tibia inflamed, ridge ulcerated, calcis inflamed.

Astragalus—Prominences inflamed, groove ulcerated to a greater extent than in the off-hock.

Metatarsals implicated.

In January the same year Young Pyrrhus, a J. B. É. horse, was brought in, suffering acutely, the near hock giving way to the greater extent; he was destroyed at once, and the hocks were found to be in the condition here related.

Off tibia—Ulceration of grooves and ridge.

Astragalus—External prominence inflamed, with very deep ulceration in grooves extending nearly the whole length of the floor, though not in a continued line.

Metatarsal inflamed.

Near tibia—Ulceration of grooves and ridges.

Astragalus—Prominences inflamed, ulceration of groove much deeper even than in the off.

Metatarsals inflamed.

This is the best case of the kind I have met with; the symptoms were intensely aggravated, and the destruction of the articular surfaces is most extensive.

In 1872 I was also called upon officially to report on five horses suffering in this manner, though the symptoms varied in intensity in each. Having examined, I reported them suffering from disease of the true hock-joint; my reasons for doing so were these.—(A) Previous experience. (B) I failed to discover any loss of motor power, though it was strikingly evident to me that the hind extremities were unequal to their task of bearing the weight of the quarters, and I decided that the weakness was in the hocks, as when standing still the hind feet were drawn as far under the body in a forward direction as possible, thus relieving the hocks by throwing the weight on the fetlocks and pasterns. When in motion the hind action was shambling and jerky to a degree, the feet being thrown outwards from an inability to flex the hock, most palpable when in the act of turning. (C) Neither could I find any trace of constitutional disturbance, loss of nervous force, or morbid changes in the muscular system; on the contrary, these horses were fat and full of heart, with the sexual desire as strong as ever, and they failed to cover simply from the fact that, though able to mount mares, they could not bear the extra strain and weight thrown on the hocks during the act, but literally sat down on their haunches; from that position, however, they could rise without assistance, as easily as after lying down in their boxes.

In 1873 they were still in good health and condition, and no worse as to lameness than in 1872, though they had marched to and from their respective stands in the district. Four of them were destroyed, and the fifth was castrated. This horse became so much better from rest (he had not been away) that it was decided to try him with a mare before operating; he came out vigorous and eager, showing no signs of lameness; on approaching the mare he reared two or three times, standing quite erect, and at last mounted her, but failed to complete the act, as his hocks gave way again and he sat down, rising, however, without assistance, though on returning to his box he was palpably lame. He was castrated, and on the third day after the operation peritonitis occurred; he recovered and was sold.

The *post-mortem* appearances in the hocks of the other four were—

No. 1.—Off hock.—Inflammation of the tibia and its articular surfaces; marked ulceration of the ridges and of the external groove in a lesser degree; tuberosity of the calcis much inflamed; inflammation of the prominences of the astragalus, with irregular ulceration of the groove; small bones and metatarsals much inflamed. Near hock.—Tibia much inflamed, articular surfaces also, but not to the same extent; ulceration of ridge and degeneration of cartilage in external groove; tuberosity of calcis much inflamed; prominences of astragalus also with well-marked ulceration of the groove; small bones inflamed; metatarsals very much so.

No. 2.—Off hock.—Tibia inflamed, with its articular surfaces and ridges ulcerated; calcis also inflamed, and its articular surface ulcerated; astragalus, prominences and articular surfaces much inflamed; ulceration of groove; small bones and metatarsals implicated. Near hock.—Tibia slightly inflamed, as were also the grooves; degeneration of cartilage of external groove; ulceration of the ridge; calcis inflamed; astragalus, prominences and articular surfaces much inflamed; ulceration of inferior portion of groove; small bones and metatarsals inflamed.

No. 3.—Off hock.—Inflammation of tibia and its articular surfaces; ulceration of ridge; calcis inflamed; astragalus, prominences inflamed, especially the internal one; irregular ulceration of the groove; small bones and metatarsals implicated. Near tibia.—Articular surfaces highly inflamed; ulceration of the ridge; calcis inflamed; prominences of astragalus highly so, with well-marked ulceration of the groove; inflammation of the cuneiform mass and metatarsals.

No. 4.—Off.—Inflammation of tibia and its articular surfaces; ulceration of ridge; tuberosity of calcis much inflamed; prominences of astragalus also with extensive ulceration of the groove; inflammation of small bones and metatarsals. Near.—Tibia inflamed with its anterior projections and articular grooves; ulceration of ridge; calcis inflamed, and its articular surfaces; inflammation of the astragalus with irregular ulceration of the groove; the small bones and metatarsals inflamed.

One of these horses had an attack of fever of twelve days' duration. An Arab horse sent in to be reported on was very lame and rolled in his gait from side to side. After resting a time he was given a mare, and covered her well *twice* in

about ten minutes, the second leap being more vigorous than the first. The effort, however, increased his lameness. He was castrated and sold.

I could continue quoting cases, but fear this communication will be deemed too lengthy already; will therefore sum up by detailing the symptoms. Stiffness in the hocks, which increases as the case goes on; crouching when mounted; constant shifting the weight of the hind quarters from one leg to the other; straddling and placing the hind feet as far forwards as possible when standing; a jerking, shambling gait, the hind feet being thrown out very much from inability to flex the hock, most perceptible in the act of turning, when also the effort to straighten the joint causes the most eccentric action in the limbs; dragging the heels when backing, and in some cases the toe in going forwards; reeling of the hind quarters; a tendency to sit down when extra weight is thrown on the hocks; ability to rise from the recumbent position without assistance, to march long distances, to work in harness, to rear, gallop, kick, to cover, to eat and enjoy life fully as much and for as long a period as the soundest and most healthy horse in the world, though in a few cases the pain is so excessive that the patient can no longer stand. Sympathetic fever sets in, and he dies or is destroyed.

This lameness may be caused by concussion, by any strain on the joint, and I believe it often occurs as the sequel of rheumatism; it is relieved by rest, and by blistering with or without firing.

Gentlemen, my tale is told; a great number of the hocks mentioned are in my possession, and are splendid specimens of articular disease of the hocks alluded to and portrayed in 'Percivall's Hippopathology.'

ON THE USE OF THE FIRING IRON.

By Williamson Bryden, Veterinary Surgeon, Boston, U.S.

My attention was attracted to an article on "Firing" in a recent number of the *Veterinarian*, and with your permission I will venture a few remarks relative to the subject.

Finding the use of the "firing iron" as a remedy in the treatment of lameness in horses very uncertain and objectionable, I have adopted another method of treating those cases where its use formerly appeared to be indicated.

In this country young horses are reared and domesticated under a variety of circumstances incompatible with a perfect development of the hoofs. I have noticed that the hoofs of all spavined limbs in young horses are ill-formed, and bear a striking resemblance to each other (the same can be said of other kinds of lameness); the limb is thus forced into a false position, the tendon of the metatarsal flexor at its insertion and the interosseous ligaments become injured by the continual strain on them in the animal's effort to relieve the foot. The irritation extends to the lining membrane of the epiphyseal foramen, obstructing or preventing the flow of nutrition into and elimination of waste from the bone; disease of the cancellated tissue within is the result, and the nutriment thus arrested forms deposits on the bone among the ligamentous and tendinous fibres, which it gradually transforms into a permanent bony growth.

I cannot understand Mr. Williams' exudation theory. It appears to me that if spavin was due to disease of the bones from concussion, the bones of such a joint as the carpus would be equally liable to a similar injury, whereas the greater elasticity of its ligaments prevents in a measure their liability to sprain.

The treatment employed by me now is to pare the hoof so as to relieve the circulation, and place the limb, especially the coffin-bone, in as near its natural position as possible, then to encourage the development of a new and more perfect growth of hoof; this can be done, and the animal kept at careful work. I seldom apply anything to the enlargement, yet when this treatment is persisted in, with judicious shoeing, the most satisfactory results are obtained.

The "firing iron" is sometimes used in what is ordinarily called sprain of the flexor tendons. On examination the hoof is found contracted, the perforans at its pedal insertion is injured along with the rest of the foot, inability to perform its part in supporting the limb is the result, and the increased duty required of the perforatus produces an enlargement. It seems to me that the object to be attained in treatment is first to retstore the perforans to its normal condition, when the enlargement will be more readily reduced, instead of trying to remove the effect and ignoring the cause altogether.

Pathological Contributions.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of December, 1874, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign Ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Antwerp .	London.	Foot-and-Mouth .	197	...	...	...	197	197
Boulogne.	„	„	257	...	...	...	257	257
Bremerhafen . .	Hull .	„	...	1	...	...	1	1
Hamburg	Hartlepool	„	9	...	...	51	60	60
„	Hull .	„	92	22	...	42	156	156
„	„	Sheep-Scab .	...	2	...	...	2	2
„	Middlesborough	Foot-and-Mouth .	...	5	...	...	5	5
Havre .	London	„	43	...	...	...	43	43
Rotterdam	„	„	...	...	...	6	6	6
Total . .		Foot-and-Mouth .	598	28	...	99	725	725
„		Sheep-Scab .	...	2	...	...	2	2
Total			598	30	...	99	727	727

"ALEXANDER WILLIAMS, *Secretary.*

"Privy Council Office,
"Veterinary Department, 14th January, 1875."

CATTLE PLAGUE.

An outbreak of cattle plague has occurred in Germany at Sawadden, in the district of Lyck, East Prussia. The disease was found to exist on the 14th of January, at which time three animals had died. Sixteen cattle which had been herded with them were slaughtered immediately on the discovery of the disease.

The estate on which cattle plague appeared is in an isolated position on the borders of Poland, and it is hoped that an effectual cordon may be established without the use of the military. The veterinary officials have gone into Poland to convince themselves of the state of disease there, as it was believed to have become quite extinct in the neighbourhood of the frontier, and importation of hay had only just been permitted when the new outbreak occurred. The cause of the outbreak is unknown, but it it supposed that the infection had been accidentally brought in from Poland. Cattle plague also prevails in ten districts in Austria, and has broken out in the Küstenland in Galicia.

During the year no less than twenty-eight districts in the Ottoman Empire have been infected with cattle plague. In Bosnia, where the disease has existed for several months, very little attention has been paid to it by the authorities, but a strict watch is stated to have been kept by the Austrian authorities to prevent cattle and sheep from crossing the frontier.

PLEURO-PNEUMONIA.

There has been no important change in the state of prevalence of pleuro-pneumonia in this country since our last report.

In the Netherlands it appears that the number of attacks increased during the month of December to ninety-seven, as against seventy-two in the previous month. This increase was, however, anticipated as the result of the introduction of a larger number of cattle from the pastures into the stables.

From Switzerland we learn that pleuro-pneumonia is confined to the cattle in five establishments.

FOOT-AND-MOUTH DISEASE.

The present outbreak on the Continent bids fair to rival that which occurred in 1872. Germany, Belgium, and France, seem to be most affected; the number of diseased animals which were landed at the English ports in the month of December, 1874, is no less than 723, all of which came from the above-mentioned countries. Not only is the disease extremely prevalent, but it is very virulent in its form, and in some instances it is stated that the symptoms are almost identical with those of cattle plague.

While the disease is thus extensively spread in Germany, France, and Belgium, it is stated to be on the decline in Switzerland, and has almost ceased in Spain. We hear of fresh outbreaks in various parts of this country.

Ireland appears to have escaped up to the present time.

SHEEP-POX.

This disease has prevailed in the districts of Bagdad and Siva, in Turkey, and in the island of Mitylene during the past year; it is also stated to have affected goats in the latter place.

WORMS IN THE HEART.

In a letter to Dr. Cobbold, dated December 24th, Mr. Benjamin McInnes, writing from Charleston, South Carolina, U.S., communicates the following brief particulars, at the same time that he transmits a specimen of the parasite:—"I send you two entozoa which I took from the right ventricle of a bitch's heart yesterday. She was said to be an Irish greyhound, about eight years old. She died from metritis, but her left lung was very much affected and her left kidney was four times as large as the right, but free from entozoa." In reply we have to state that the small bottle contained only one characteristic female example of the cruel threadworm (*Filaria immitis*, Leidy), about seven inches in length. It is interesting to find this parasite widely distributed on the American continent, as it is well known to be so in Asia; but we want more precise evidence as to its prevalence in Europe, and also as to whether the microscopic filariæ occasionally found in the

blood of dogs are to be regarded as genetically related to this entozoon. The circumstance that minute filariæ may be present without the concurrence of sexually mature nematodes seems rather to point to their mutual independence.

T. S.

HÆMATOZOA IN PARIAH DOGS.

Dr. T. R. Lewis, M.B., Staff-Surgeon of H. Brit. M. Forces in India, has just published an important paper (forming an Appendix to the '10th Annual Report of the Sanitary Commissioner of the Government of India'), in which he announces the discovery of multitudes of hæmatozoa in pariah dogs, at the same time tracing their origin to the *Filaria sanguinolenta*. He has also discovered some new worms in the walls of the stomach of these dogs, which he describes as Echinorhynchi. They are, however, examples of the *Cheiracanthus robustus*. P. S. C.

Facts and Observations.

Equine Statistics.—M. Decroix, a chief veterinary surgeon of the French army, gives the equine population of Europe as follows:—Russia, 1,800,000; Austria, 3,100,000; England, 2,666,200; Germany, 2,500,000; Turkey, 1,100,000; Spain, 650,000; Holland, 300,000; Belgium, 260,000; Switzerland, 110,000; and France, 3,633,600.—*Public Opinion.*

The Physiology of Secreting Glands.—At the recent meeting of the German Medical Association, at Breslau, certain important communications were brought forward on the anatomy and physiology of secreting glands. Professor Heidenhain, in describing the results of his investigations upon the pancreas, stated that he has discovered that there are certain differences between the active or secreting and the quiescent pancreas, just as there are in other glands such as the salivary and gastric. He has also shown that the pancreatic juice is quite different according as it flows from a permanent or from a temporary (that is, a freshly established) fistula; the latter only is to be regarded as the normal. Dr. Nawrocki, of Warsaw, described at the same time the physi-

ology of the nervous and secreting portions of the parotid. The nerves of secretion of the gland are the facial and sympathetic, and these can be excited reflexly from the trigeminal or glosso-pharyngeal only. Atropine has the same effect on the parotid gland as it is known to possess on the submaxillary.—*Medical Times and Gazette.*

Coagulation of Milk.—Olof Hammarsten has examined the coagulation of milk, proving that milk-sugar has no influence on the coagulation of milk by rennet. He throws down milk with chloride of sodium, re-dissolves the precipitate in water, and separates the butter by agitation; precipitates the casein a second time with chloride of sodium, and re-dissolves in water. He thus obtains a solution of casein free from sugar of milk, and which coagulates with rennet like milk. This coagulation cannot be due to lactic acid, and must be owing to a ferment in the rennet. The solution of the pure ferment does not yield the xanthoproteic reaction. It is not precipitated by nitric acid, alcohol, iodine, tannic acid, and neutral acetate of lead, but by the subacetate. Ebullition destroys its activity without coagulation. This ferment is soluble in water, glycerin, and saline solutions. Its solutions do not pass through membranes by diffusion. Alcohol destroys the ferment in course of time. The membrane of the stomach of all animals contains a soluble matter, which is not the rennet ferment, but which is converted into it by lactic or hydrochloric acid. The author has found that the membrane of the stomach, besides pepsine and this body, contains a third ferment which converts milk-sugar into lactie acid.—*The Chemical News.*

Fodder for Cattle, of chopped straw and hay, is being mixed in Belgium just now with good wheaten flour, and allowed to ferment for twenty-four hours somewhere adjoining the stables. The aroma arising from this mixture is said to tickle the animals' palates, and set their mouths watering; and, seasoned with a little pulp, this food is as economical as it is nutritive. A little care is required in the preparation, which should be done daily at the same hour, some buckets of hot or warm water, according to the temperature of the external air, being thrown upon it, and the whole mixed, neither too little nor too much, and, if necessary, set in a heap to promote fermentation. For horses another mixture is made, excluding the flour, using more hay, and less but finer-chopped straw, bruised oats, bran, and, when the price is not too great, a very small quantity of buck-wheat flour.—*Land and Water.*

THE VETERINARIAN, FEBRUARY 1, 1875.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

VIVISECTION.

THE recent presentation of a memorial to the Society for the Prevention of Cruelty to Animals on the subject of vivisection has attracted public attention to a matter in which the public is ill qualified to judge, and in respect of which it is likely to accept any statements which are sufficiently sensational; and those who profess to advocate the cause of humanity to brutes do not disdain to adopt strong expressions in the course of their arguments which are more remarkable for harrowing details than for accuracy of diction.

Our readers will remember the late prosecution at Norwich, which was instituted by the Society for the Prevention of Cruelty to Animals, against some scientific men who injected alcohol and absinthe into the veins of dogs for the purpose of demonstrating the effects of those agents on the animal organism. We express no opinion as to the necessity or value of those experiments, but we entertain a strong conviction that no necessity existed for the use of the term vivisection to indicate the simple operation of introducing the fine nozzle of an injecting syringe into the femoral vein, and the statement of the dogs being *crucified*, because their legs were secured by cords to the operating table, is a sentimental misuse of language.

The most common mode of attacking the system of experimenting on living subjects is embraced in the inquiry, What has vivisection done for physiological science? This triumphant query always, of course, goes unanswered, because those who are capable of replying do not concern themselves with such a frivolous question; but it may be more pertinently asked, What has vivisection not done? Take away all that has been established by experiments on

living animals, and how much should we know of the functions of animal tissues and organs? If the opponents of vivisection choose to take up the position that enough has been done, and that science may rest content with its discoveries, they have a legitimate plea on which to base their arguments; but they will certainly be met by the suggestion that many important points yet remain to be determined, and without vivisection any further advance in physiological discovery is out of the question.

Legislation on the subject is not likely to produce any satisfactory results; we assume that the total prohibition of vivisection, under all circumstances, is out of the question, and, short of this, we do not see what limits can be defined. For our own part, we have never encouraged the system of experimental teaching, not because we doubt the fact of the method being a very efficient one, but for the reason that effective teaching is possible without vivisection, and whatever be the advantages to the student, we hold that the repeated infliction of pain for the purpose of tuition is not justifiable. To hold this view is one thing, while to express it in legal phraseology in an Act of Parliament is another, and we do not believe that any power which the law could apply would prevent teachers of physiological science from demonstrating the functions of organs to their pupils by means of vivisection if they think it advisable or necessary to adopt that method of instruction.

We quite agree with the *Globe* of January 26th, that vivisection should be strictly confined to occasional experiments undertaken in the interests of science and carried out in private by eminent medical men who could be trusted to avoid all needless cruelty, but we fail to see how this condition of things is to be brought about by legislative interference.

Reviews.

Quid sit pulchrum, quid turpe, quid utile, quid non.—Hor.

Die Kolik der Pferde. Sechs Klinische Vorträge. Von F. Friedberger, Prof. an der Königlichen Central-Thierarzeneischule in München. Berlin, 1874.

Colic of the Horse. Six Clinical Lectures. By F. Friedberger, Professor at the Royal Central Veterinary School in Munich. Berlin, 1874.

Die Kolik der Pferde und das Wurmaneurisma der Eingeweidearterien. Eine Path.-Anat. und Klinische Untersuchung. Von Dr. Otto Böllinger. Munchen, 1870.

Colic of the Horse and the Verminous Aneurism of the Intestinal Arteries. A Pathologico-Anatomical and Clinical Investigation. By Dr. Otto Boellinger. Munich, 1870.

(*Continued from* p. 28.)

Reflecting on the varied character of the causes concerned in the production of *colic,* it is not surprising, as Friedberger observes, to find widely different notions entertained by veterinary practitioners on this subject. We should not, however, as he writes, permit ourselves to be disheartened by the admitted difficulties attending the formation of a correct diagnosis. We must grapple with the chief problem before us, and seek to find out the essential pathological process with which in any particular case we have to deal. The fact that abdominal pain, though often a true indication of intestinal mischief, may mislead us as to the precise seat of the colic, should not deter us from making every possible exertion to find out the precise nature of the malady. By superficial investigation many "unusual phenomena are readily overlooked, and thus fatal mistakes may be made" (s. 5).

Looking to true colic we observe a variety of normal conditions favorable to the disorder. Thus, amongst others, the horse has great difficulty in vomiting,—a physiological fact that partly accounts for abnormal accumulations, both gaseous and solid, in the stomach; or, as Gamgee has remarked, there is an insusceptibility to emetic action (Unempfänglichkeit). This itself may be due "to the smallness of the stomach, which does not reach the roof of the abdomen, to the oblique position of the gullet and thick muscular state of its lower end, and to the almost cæcal

character of the duodenal end of the stomach itself. Further, it is undeniable that the very considerable length of the intestines, and also the length and free location of the colon and cæcum, together with the ease with which a change in the position of the bowels is effected, are circumstances which, when taken collectively, more or less tend to produce conditions favorable to colic" (s. 6).

Friedberger then proceeds to note the fact that the horse is particularly liable to harbour intestinal worms; and this is the point that we are mainly concerned in bringing out in the present review. There is, for example, he says, the *Sclerostoma equinum* (more generally recognised amongst ourselves as the *Strongylus armatus*), which is concerned in the production of aneurism of the visceral arteries; a disorder which is a fertile source of colic amongst old horses and a frequent cause of mortality.

Worms in the intestinal canal do not usually afford external indications of their presence, but they do so when they happen to congregate in great numbers, thereby abnormally distending the gut. In such cases they form a sort of barricade, rendering the passage impervious. In this relation the common round worm or lumbricoid of the horse (*Ascaris megalocephalus*) plays the most conspicuous part, often occurring in astonishing numbers and producing severe colic in consequence (s. 9).

We can confirm Friedberger's statements in this respect, having frequently had cases brought under our notice where many hundreds of these parasites were present. In one instance the pupils at our English college counted over 1200 specimens removed from a patient *post-mortem*. In the pages of *The Veterinarian* several fatal cases of the kind have been recorded by Moir and others.

But Friedberger next goes on to state that he has observed severe diarrhœa, and violent restlessness, which terminated fatally, produced by the little four-spined strongyle (*Str. tetracanthus*); countless numbers of this parasite having been afterwards found free in the cæcum and colon. A similar experience has recently been recorded in this country.

In addition to the above our author refers to several other species of entozoa that are capable of producing functional disturbances when they happen to occur in considerable numbers. Amongst these he enumerates the two common tapeworms of the horse (*T. perfoliata* and *T. plicata*), and also the *Spiroptera megastoma*. In connection with the last-named parasite we have very recently called attention to some interesting pathological facts supplied by

Mr. Spooner Hart, of Calcutta; and, as regards the tape-worms, we have adduced the strongest possible evidence as to their power of causing an endemically fatal form of colic. Not merely so; we have shown this power of inflicting fatal results on a large scale is also shared by the four-spined strongyle already alluded to. In addition to these new discoveries, moreover, we have ascertained that there is yet another nematode entozoon capable of inflicting severe mischief. This parasite we have provisionally named *Trichonema arcuata* (*The Veterinarian*, February, 1874). Our author also alludes to the injurious capabilities of the larvæ of the gad-fly (*Œstrus equi*).

After devoting a considerable space to the causes of colic other than those of a parasitic kind, Friedberger, in his first lecture, again reverts to the *Strongylus armatus*. On this subject he enlarges with much warmth, but nearly all that he states appears to be based on the published statements of Dr. Böllinger, to whose writings he does ample justice. In like manner, it may be said that Böllinger recognises in Professor Leuckart the real *savant* whose researches in helminthology have done so much to throw light upon this obscure department of pathology. Thus, in reference to Böllinger's researches Friedberger happily remarks that, "viewing the matter from anatomical, pathological, and clinical standpoints, his investigations give out well-ascertained results, and they clear up the mystical darkness in which so many were held. If through his treatise one united and compact causative basis is not created for every case of colic, at all events it accounts for a great many" (s. 10).

Our author then passes on to give a *résumé* of these researches; but since Böllinger has himself given an admirable summary towards the close of his essay, we prefer to quote *seriatim* from the original. In doing so we must (notwithstanding the prolixity of style of our German authors) adhere somewhat more closely to the foreign text than we have hitherto felt it necessary to do. We are bound to say that the diffuseness of style of some foreign authors often renders the translation of their works a provokingly tedious occupation. One has to wander through innumerable pages to extract the really new matter, which might probably have been stated in as many lines. Before we have done, we think we shall satisfy our readers that Böllinger's summary constitutes a profoundly interesting and exhaustive epitome of the subject under discussion.

(*To be continued.*) T. S. C.

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The Student's Guide to Zoology: a Manual of the Principles of Zoological Science. By ANDREW WILSON. Pp. 327. London: J. and A. Churchill, 1874.

WE believe there are few, if any, branches of knowledge upon which more hard work and careful reasoning have been bestowed, and to which a greater amount of general attention has been attracted during the last twenty years than Biology, *i. e.* "the investigation, in its fullest sense, of *living* beings in all their relations, whether to each other or to the objects by which they are surrounded." These remarks are particularly true in reference to that division of Biology which is termed Zoology, and which relates to the life of animals—a department of natural science which should be of the greatest interest to every student and member of the veterinary profession.

To such of our readers as intend commencing the study of zoology, as well as to those who are desirous of acquainting themselves with the latest investigations in this subject, we can heartily recommend the careful perusal of Mr. Wilson's most enjoyable work. Although strictly scientific in method and arrangement, it is pleasantly written, it contains an immense amount of accurate information in a small space, it is well illustrated with woodcuts drawn by the author, and it possesses those great boons to the student—a carefully compiled glossary and copious index.

Notes on Comparative Anatomy: a Syllabus of a Course of Lectures delivered at St. Thomas's Hospital. By WILLIAM MILLER ORD, M.B. Lond., M.R.C.P., &c. Pp. 203. London: J. and A. Churchill, 1871.

THIS syllabus was prepared by the author for the use of his class of comparative anatomy, and he has so arranged the course "as to present to the student a chart in which a few principal centres of life are clearly indicated, as opposed to that sort of chart in which the paper is filled to confusion with closely packed names of places of all grades of importance; a traveller's handbook as opposed to a bare, lifeless list of countries only illustrated by instantly-to-be-forgotten tables of such things as latitude and longitude, of value of produce, or of articles of commerce."

The subjects are arranged and described under the following heads:—Distinctions between Not-living Matter and Living Beings; Distinctions between Animals and Plants;

Principles of Classification; Distinctive Characters of the Five Primary Subdivisions of the Animal Kingdom, viz. Vertebrata, Mollusca, Annulosa, Cœlenterata, and Protozoa; General Anatomy and Classification; and Relation of Man to Simians.

Mr. Ord has undoubtedly performed his task with ability, and produced an exceedingly useful and reliable introduction to the more voluminous treatises on comparative anatomy. We think, however, that the value of his handy little volume would have been greatly enhanced, especially in the estimation of those readers who are not members of his class, had he drawn attention in a short bibliography to the principal writings of the leading authorities on the different subjects with which he deals.

Extracts from British and Foreign Journals.

INTERNAL PARASITES OF SHEEP.

In the second number of the newly issued *Journal of the National Agricultural Society of Victoria* Mr. Richard Bennett, writing to the editor on the 26th of last August, communicates the following particulars on the subject of rot in sheep and kangaroos:

As much and varied correspondence has taken place on the subject of maintaining our flock and herds in health, I will not devote this letter exclusively to one disease, but will offer suggestions which have presented themselves to me to deal in a comprehensive manner with the subject, and will lay them before your readers in as concise a form as possible. To commence with that scourge of our flocks—Fluke, or Rot—much difference of opinion exist; first, as to whether it is indigenous to certain pastures, having been in existence prior to sheep being introduced into the colony; and, secondly, do sheep infected with it also communicate it to what is considered sound pasture, by grazing over it? Professor Cobbold, in his new and interesting work, 'The Internal Parasites of our Domesticated Animals,' says—"The common fluke is found in most ruminants, including antelopes and deer, and it has been described as also infecting the horse, ass, hare, rabbit, kangaroo, and beaver. Its alleged presence in the two last quadrupeds requires confirmation;

but I can testify to its occasional presence in the rabbit in great numbers. In some eighteen or twenty instances this parasite has likewise been detected in the human body." Now, having myself found fluke in great numbers in the livers of kangaroo, the question arises—whether fluke is indigenous to the pasture, and has it not existed in the kangaroo and other ruminating animals of the colony long prior to the introduction of sheep? In the early days of the colony the large extent of pasture that was burnt every summer doubtless played a very important part in keeping this disease in check, in destroying vast numbers of the parasite; of late years this practice has been discontinued, consequently the scourge has increased unchecked.

Professor Cobbold's researches have proved that the fluke is developed in a variety of forms in various aquatic snails, also that "Cattle and other ruminating animals become infested with flukes, distomes, amphistones, fascioles, and what not, in a direct manner, when they drink from ponds, stagnant pools, and even running streams of water. It is probably not necessary the pond snails themselves should be swallowed, seeing that the free-swimming cercariæ appear to be able to complete their fluke development without passing through the encysted pupæ stage within the bodies of their intermediary bearers." Now, with these facts before us, the eradication of fluke seems to be a matter of considerable difficulty, and can only be lessened by combined action among the graziers themselves, assisted by such regulations as the Government may adopt. There is no doubt but with the extension of free selection, and the more general combination of grazing with farming, that fluke will spread in proportion. Draining, burning, and a plentiful supply of salt on pastures, must be adopted wherever practicable, and the destruction of kangaroo, rabbits, &c., vigorously carried on. With respect to draining, its beneficial effects on the country in general cannot be over-estimated, and I look upon money spent in such an undertaking as a most profitable investment.

Another disease, and which is likely to prove almost as destructive to our flocks as fluke, is intestinal worms. Professor Cobbold, in his work before referred to, page 78, says—"As regards certain other nematode parasites, it is only necessary to state that the sheep is infested by at least six more species, making in all eight ovine nematodes. These may be enumerated as, the twisted strongle (*Strongylus contortus*), itself capable of producing an epizootic; the slender-necked strongle (*Strongylus filicollis*); the bent strongle

(*Dochmius cermius;* and the rigid strongle (*Dochmius hypostomus*). In addition to the strongles we find the common whip worm of ruminants, *Trichocephalus affinis,* in great abundance; and, as I have already shown, it appears to be capable of producing severe symptoms in the ovine bearer." Now, as the sheep most subject to the worm disease appear to be those grazing on our rich succulent pastures, while sheep in districts that possess a variety of indigenous grasses, bushes, and herbage, are exempt, all sheepowners whose sheep suffer from worms should introduce into their pasture as great a variety of herbage as possible, such as hoarhound, chamomile, crowfoot, &c., and provide a liberal supply of salt for their sheep. I have noticed lately that immense numbers of wallaby have died in the western coast districts, destroyed by these intestinal whip worms, and so destructive has the disease been to them, that in places where they were formerly most numerous, they are scarcely ever seen; and during the last summer, I have seen them lying dead all over the country, and on opening some of them they were a mass of worms in their intestines. Now, the question arises, did the wallaby communicate the disease to the sheep, or the sheep to the wallaby? Or, has it attacked both simultaneously, being introduced into the system by drinking stagnant waters, and an overabundance of rich succulent herbage deficient in saline properties?

To all graziers who wish to secure water for their stock I would strongly recommend the sinking of wells, and dispensing as much as possible with dams, swamps, and waterholes, all such being highly favorable to the development of fluke, worms, and other parasites. Well water generally possesses medicinal properties, either saline or impregnated with carbonic acid gas, as is the case in limestone districts, or contains mineral properties, through the springs passing through veins of minerals, the existence of which is at present unknown to us. All swamps and rank grass should be burnt whenever practicable, and sheep be allowed to graze on the burnt tussocks; the carbon consumed by them in so doing must be very invigorating to the system, and tend to maintain a healthy state of the blood. One most extraordinary and interesting discovery made by Professor Cobbold in his researches is that the same parasite assumes different forms in different animals. This he has proved by a system of the most patient and laborious experiments, in which he was assisted by Professor Simonds. In page 25 of Cobbold's work he says—"If a calf, heifer, or full grown ox, be induced to swallow the ripe and living eggs of the human tape worm

in question, the contents of the ova thus ingested will, in course of time become transformed into measles." And their experiments have demotstrated, without donbt, that measles in animals, either bovine or ovine, are neither more nor less than tape worms in certain stages of development. It would be a great benefit to the country at large if some of our scientific and highly educated graziers were to devote some of their leisure time, with the aid of a powerful microscopical apparatus, in investigating this most interesting branch of helminthology, and publish the results of their investigations in the public journals. The more generally such information is diffused the greater the interest taken in it; and I consider it a duty every member of society owes to the community at large to give them the benefit of any information that may be of use, either in detecting and dealing with diseases of stock, or improving the breeds and the pasture on which they graze. In conclusion, I will remind your readers of an old truism—"That every man who makes two blades of grass to grow where only one did previously, is a public benefactor."

PROPOSED ESTABLISHMENT OF A VETERINARY COLLEGE IN MELBOURNE, AUSTRALIA.

The following important article, signed by Mr. Richard Bennett, is extracted from the *Journal of the National Agricultural Society of Victoria* for September, 1874:

The establishment of a Veterinary College and Hospital in Melbourne is a subject of such importance to the present and future prospects of the Australian colonies that the idea should be at once acted upon, and steps taken to commence such an institution with as little delay as possible. The rapidity with which the lands of the colonies are becoming stocked, and the many millions of acres that are available for nothing else but grazing, point conclusively to the fact that, as our stock increases, meat preserving must and will be our most important industry. In order to establish a permanent demand for our meats in the markets of Europe, and particularly among the naval and mercantile marine, it is absolutely necessary, above all things, that our stock be known to be free from disease of every description. Suppose, for example, meat preserving was attempted in England, or on the Continent, would the meat be saleable? No; for this reason, that pleuro-

pneumonia, foot-and-mouth disease, and rinderpest are rife among the cattle; and fluke, sheep pox, scab, and catarrh among the sheep; and the public would have no guarantee that the meat so preserved was free from infection. Happily, at present, the great bulk of our stock enjoy perfect immunity from disease, and it is only by our colonies possessing an efficient staff of properly trained and qualified veterinary surgeons that we can hope to deal successfully with and stamp out disease when it makes its appearance. We have as follows:

	Sheep.	*Cattle.*	*Horses.*
In Victoria . . .	10,002,585	799,509	181,643
In New South Wales .	19,298,590	2,710,374	328,014
	29, 301,175	3,509,883	509,657

With this enormons amount of stock in the two colonies, what veterinary surgeons have we to cope with disease incidental to them? My idea is that every police district throughout the Australian colonies ought to have a perfectly qualified veterinary surgeon attached to it; and it is for the education and proper training of young men for such a profession that the idea of a college presented itself to me. The *Australasian* of 8th instant, in commenting upon the report of the Secretary for Agriculture, remarks —"The formation of a Veterinary School is primarily necessary, and Dr. Thompson advances good reasons why such a school should be established at the Melbourne University, and in connection with the Medical School already in operation there. Such an amalgamation would make veterinary medicine more scientific, human medicine more comprehensive, and both more useful." I consider such an amalgamation as the one proposed would not only defeat the great object to be attained, but would send abroad over the colonies a large number of quacks, or, in other words, men only half instructed in their profession, and who, if they did no great harm, would certainly do no good. The old maxim, "A little learning is a dangerous thing," is very applicable in this instance. My idea is either do a thing well and thoroughly, or let it alone. Let us see the advantage to be derived from the establishment of a Veterinary College and Hospital for Diseased Animals. In the first place, every student would be instructed in diseases most prevalent among our stock, he would have the advantage of seeing the various forms of disease treated in the hospital, dissections made of dead animals, and of studying their anatomy, and the difference between healthy and diseased

organs. Also the various stages of pleuro-pneumonia in cattle, and the proper description of lymph to select for the purpose of inoculation; he would also be instructed in the proper way to inoculate, thereby saving stockowners many hundreds of pounds by having their cattle inoculated in a proper and efficacious manner. The study of fluke in sheep, in all its various stages, would also occupy his attention, and from the many favorable conditions the Australian flockowner is blessed with over sheepowners in the old country there is no season why the disease, if it cannot be thoroughly eradicated, may at all events be kept within very narrow limits. In the institution I am proposing the student would be *practically* educated and presented to the country as a properly qualified veterinary surgeon, fully competent to deal with diseases or accidents in every presentable form. In the university amalgamation scheme he would be *theoretically* educated, and be imposed upon the pastoral community as a *quack*, and calculated to do more harm than good. Mr. Armatage, M.R.C.V.S., editor of 'Clater's Cattle Doctor,' says, speaking of the great necessity that exists for properly qualified veterinary surgeons—"Legislation in reference to cattle diseases, with the assistance of veterinary science, is calculated to do an incalculable good to the nation. At present the owner of live stock receives little or no assistance. In those districts where the greatest amount of Britain's wealth is accumulated, viz. the centres of agriculture, where the greatest amount of veterinary skill is constantly needed, there is positively the least; quacks and pretenders are prevalent and all-powerful, and education and ability are unnoticed, or absolutely spurned. In the United Kingdom there are not more than 1500 qualified veterinary surgeons, but there are nearly 20,000 men who prey as parasites upon the sustenance of proprietors of animals under the name of farriers, cow-leeches, quacks, pretenders, and the dishonest assumption of the title of 'Veterinary Surgeon.' If there were no one to patronise ignorance, quackery, and chicanery, there would be none to practise it, the diseases of animals would receive greater attention, deaths would be less, and the profits of the agriculturist from the breeding and rearing of stock infinitely greater." Again, the same editor says, in his preface to the work before referred to, in dealing with diseases of stock—"It has been too much the fashion to rest satisfied with a non-professional mode of examination; and signs, greatly mistaken, have obstructed progress in the right direction. With the first death on a farm a

prompt and careful *post-mortem* examination should be made by competent veterinarians, and, after learning the cause, means may be instituted to avert the occurrence of additional disasters. Such would also afford a grand impulse to scientific teaching, and do away with an unwholesome and unprofitable system of drugging. If the veterinary surgeon were employed on account of the sound advice he can convey, the agriculturist would find it a more advantageous proceeding, and the country at large greater resources in its agricultural wealth."

As regards the departmental working of the institution, I will not presume to offer any suggestions, leaving that to be decided by those who have a more extended knowledge of such matters than myself. The institution should be provided with a library containing all the latest works on veterinary and anatomical science, and possess a powerful microscopical apparatus for investigating the action the different diseases have upon the blood and tissues. An efficient draughtsman should also be appointed to make drawings of anatomical subjects, to serve as illustrations to the various lectures that would be periodically delivered. When we consider that the pastoral interest is only in its infancy in the colonies, and the many millions of acres of fine available pasture land that are known to exist, and being rapidly made available, where in Sturt's (the explorer) time all was supposed to be a stony desert, and that all this fine country is being stocked with thousands of sheep and cattle. Cooper's Creek being now looked upon by the residents of the Darling as being as much in the settled districts as Fort Bourke was by the inhabitants of Bathurst a few years since. Such being the case the question of maintenance of health among our stock is one of primary importance, and nothing will go so far to allay any doubts or apprehension as to the health of our stock in the home markets, as the knowledge that we have an institution where efficient veterinary practitioners can be educated to watch over the health of our stock. Another very important feature is the rapid settlement upon the lands of the colony of a large yeomanry population, men who combine farming and grazing. It is to this class of our graziers that we have to look forward for the large increase of our stock. Victoria, with an area of 55,571,840 acres, had, in 1872, 799,509 head of cattle, 10,002,585 head of sheep, and 181,643 head of horses. Great Britain and Ireland, with 77,440,000 acres, or a little over a third more acreage, maintain 8,500,000 head of cattle, 40,000,000 of sheep, and

5,000,000 of pigs, worth at a low computation no less than one hundred and twenty millions of money, besides a population of thirty-one and a half millions. The one great difficulty that presents itself to parents is what to do with their sons when they leave school? This question applies most particularly to a very numerous class of our community; people with limited means, and who are not in a position to give their son a university education, so that any proposal to incorporate a veterinary school with that institution would, if carried into effect, debar that portion of our fellow-colonists who are most in want of a practical and respectable opening in life for their sons, who, after giving them a good plain education, could afford to send them to the Veterinary College, where all their energies would be devoted to the one science by means of which they look forward to their success in life. Under former and existing circumstances, many young men, as soon as their education is finished, for want of remunerative employment, find their way into the bush, where some of them after undergoing two or three years' probation gaining colonial experience, as it is termed, consider themselves fortunate if they get an appointment as overseer at from £80 to £100 per year. Others, again, follow the avocation of drovers of stock, when after undergoing incredible hardships on the roads for a few years, and undermining their health, drift away beyond the limits of civilisation, and are no more heard of. At least 75 per cent. of these men are tolerably, if not well educated, and thus through want of proper institutions, one of which I am now proposing, scores of young men, the moment their education at school is finished, are thrown upon their own resources, and, for a want of a profession at which they could earn an independent living and become talented members of society, are utterly lost; and, in too many instances, several of which have come under my own personal observation, during many years of station management in the out districts of New South Wales and Queensland, they get ill, and die unknown and uncared for, and I am sure there is not a station owner in this room that has been living in those out districts but will endorse what I say. Before closing this paper I will offer a few remarks on the importation of stock from the United Kingdom and the Continent of Europe. When we reflect that we have no contagious disease among our stock that cannot be traced to direct importation, and that at the present time disease is rife among both sheep and cattle, not only in Great Britain, but also on the Continent, and that many of the diseases are

so insidious in their action that the germs may exist in a beast or sheep for months waiting for a favorable condition before they develop themselves, and that the most rigorous examination by experienced veterinary surgeons prior to shipment may be unable to detect the slightest symptoms of disease, and being now in the possession in the colonies of the very best blood, both of sheep and cattle, that the home country can boast, and the progeny of imported stock improving on the original stock, owing to the beneficial effects of our fine climate, wholesome pasturage, and more natural style of feeding, I think the time has now arrived for us to establish breeds and types of our own, synonymous with the Lincoln, Leicester, Cotswold, and Romney Marsh of Great Britain. In the various letters I have written on the localisation of breeds, I have always pointed out the advantages to be gained by keeping certain breeds of sheep in certain localities or districts that are best adapted to them, the result of such plan is obvious; but our western coast districts are no more suited to the merino than are the dry saltbush plains of Central Australia to the English long-woolled. In the early days of Victoria the merino did very well, but then the conditions of country and climate were very different to what they are at the present time, particularly in our western districts. With the settlement of the land by agriculturists timber has disappeared, and the climate has become perceptibly colder, and the merino cannot stand the bleak and exposed paddocks that the western district is divided into. With the adaptation of the different breeds of sheep to districts suited to them, disease must be lessened. There is, at present, a considerable demand springing up in New Zealand and elsewhere for our improved breeds of sheep, and nothing will tend to increase that demand more, and lead to a large and remunerative trade, than our being able to guarantee our stock perfectly sound and free from disease.

THE THEORY OF PUTREFACTION.

By Traube and Gscheidlen ('Dingl. polyt. J.,' ccxxii, 352).

Concerning the phenomena of putrefaction, two hypotheses have been enunciated:

I. By Liebig: that "When the life-power or vital force has ceased to control the organic combinations, the nitrogen in the albuminous bodies, by its affinity for hydrogen, decomposes the water, with formation of ammonia."

II. By Schwann: who describes putrefaction as the action of microscopic organisms, found in all putrefactive matter. The former theory has many adherents amongst chemists, but the latter is considered by the authors of this paper as the only correct one. For example, the most easily decomposible matters, as blood, muscle, saliva, urine, white of egg, yolk of egg, pus, without previous boiling, and even in the presence of oxygen, suffer no decomposition, if care be taken to prevent the admission of organic germs from without; a proof that in themselves the albuminous bodies do not possess the power of self-destruction. Burdon-Sanderson's researches prove that the microzoa (bacteria) occasioned by the putrefaction of animal matters, do not, as hitherto assumed, arise from the atmosphere, but are present in the water, and adhere to the surfaces of all objects. Blood was drawn from the veins directly, with careful exclusion from without, of all bacterian germs, and was collected in glass tubes. In these tubes it was preserved for months, and was then found to be quite free from putrefaction. The next point investigated was the power of resistance offered by living organisms to putrefaction. It is considered that these animal organisms continually exposed to the action of the widely diffused bacteria possess antiseptic properties, *i. e.*, the power of destroying these microscopical beings and their germs.

The authors next attempted to determine whether, and how far, living animal organisms are capable of destroying in their bodies the putrefactive bacteria. The results were as follows:

I. Warm-blooded animals (rabbits and dogs, especially the latter) bore the injection into their blood of increasing quantities of fluids containing bacteria without permanent injury. It is thus proved that living organisms behave very differently towards putrefactive bacteria from dead ones, through which the most minute quantity of these microzoa speedily spread decay.

II. Arterial blood taken in the above-mentioned manner from a rabbit, into the jugular vein of which, twenty-four or forty-eight hours previously, $1\frac{1}{2}$ c. c. of a fluid containing bacteria had been injected, did not putrefy after months; a proof that the injected bacteria had been destroyed in that short time.

III. The circulating blood possesses the power of rendering the putrefactive bacteria inactive within certain limits. The injection of very large quantities of bacteria into the blood of dogs and rabbits produced death in from twenty-

four to forty-eight hours. In this case, blood taken from the bodies shortly before death, with all the afore-mentioned precautions, was found to contain the bacteria germs.

IV. It was found impossible to ascertain to what constituents or essential property the living blood owed its power of annihilating the putrefactive bacteria. Possibly it is the ozonized oxygen of the blood-corpuscles which possesses this property (thus resembling the active oxygen of potassium permanganate). Ordinary (or inactive) oxygen greatly promotes the putrefaction.

V The putrefactive bacteria are not found to be the infectious poisons which have hitherto been looked upon as so dangerous. In their action they differ altogether from the contagious bacteria (viz., spleen inflammation, smallpox) which cause pyæmia. The putrefactive bacteria do not act infectiously, as they multiply in the living organism only so far as their chemical activity enables them. Only those bacteria act in contagion that can multiply in the living organism, and of which the smallest quantity is sufficient to elicit a specific development. According to Davaine, the $\frac{1}{100,000}$th part of a drop of splenic inflammation blood is sufficient to develop splenic inflammation in a healthy animal. (This blood contains the bacterium known as *Bacillus anthracis.*) The circumstance that if the putrefactive bacteria do not exist in the organism in too great quantity, they are destroyed therein, is indeed an essential condition of the continuance and progression of the whole organic world. If they multiplied in living animals as readily as in the dead, or as the splenic inflammation bacteria in living warm-blooded animals, the animal kingdom would be quite unable to resist putrefaction, owing to the enormous spread of the putrefactive germs, and animal life would become impossible.

VI. The repugnance of the putrefactive bacteria to the contagion bacteria is shown in the fact that the former destroy the latter. It has been proved by numerous observations that contagious matter is rendered innocuous by putrefaction.

VII. In the gastric juice the higher animals possess a powerful antiseptic. Putrefactive bacteria exposed to its action are killed, so that when placed in Pasteur's fluid, a highly developing medium for such bacteria, they no longer multiply.—*Journal of the Chemical Society.*

Analysis of Continental Journals.

By G. Fleming, M.R.C.V.S., Royal Engineers.

VETERINARY SCIENCE IN RUSSIA.

Veterinary science in Russia promises to take as high a position, if not higher, than it has gained for itself in other countries on the European Continent; thanks to the wisdom and foresight of what may well be designated a "paternal" government, which does not leave this important branch of medicine to the chances, abuses, and misadventures of private enterprise, caring nothing whether it rises or sinks, or keeps barely alive from sheer necessity; but is fully impressed with its value, and the need there is to foster and promote its aims in every way. From a scientific point of view, it may truly be said that veterinary instruction is more advanced in Russia than in any country in Europe, and is quite on a level with that of the superior scientific teaching in the other universities. This is amply proved by Zundel, to whom Professor Seifmann, director of the Veterinary School of Kazan, communicated the following information relative to this subject; from which it will be seen that our science is likely to attain its highest development among our northern neighbours.

In Russia the veterinary schools, or rather "veterinary institutes," as they are designated, form an integral part of the Universities; the director of the Institute ranks as *doyen* (dean); the ordinary and extraordinary professors hold the same rank as the University professors, and the students belong to the University classes. This is, therefore, an organization analogous to that which the German veterinarians agreed to solicit at the Veterinary Congress held at Frankfort in 1872.

The Russian Veterinary Institutes are at present four in number: that at St. Petersburgh, directed by Rawitsch; that at Dorpat, directed by Jessen; that at Charkow, directed by Halicki; and, lastly, that at Kazan under the superintendence of Seifman. There is also a veterinary school at Warsaw, but it is not yet organized as an Institute.

Each of these establishments is entered in the Budget every year for a credit of 35,700 silver roubles (nearly £5700). The director of the Institute is at the same time a professor; he is allowed a house gratis, and receives annually 3300

roubles (£523; certainly a high salary in that country, where expenses are comparatively trifling). There are, besides, three other ordinary professors, who receive each 3000 roubles (£453); an extra professor, who is paid 2000 roubles (£302); four *docents* or assistant professors (of which one teaches pharmacy, another rural economy), receiving 1200 roubles each (£181); a preparer of dissections, having the rank of assistant professor, and an aide-dissector at 700 roubles (£76); a forge-master, who has also 700 roubles and free quarters; and other *employés* necessary for carrying on the work of the institute. All these functionaries can retire on a pension after twenty-five years' service; but if they wish to remain, they receive their retiring allowance along with their ordinary annual payment; and if they continue for another period of twenty-five years, they are entitled to a double pension.

In addition to the establishment of teachers above enumerated, there are *privat-docents*,* or "free professors," as they are designated, who have no fixed salary, but to whom the Council of the University may award an honorarium; they usually profess special courses.

The professors of the Institutes are all veterinarians, and even *magisters* in veterinary medicine; a kind of *doctorat* or degree they must obtain after they have finished their studies at the College; they only lecture on veterinary science; the other branches of general science, as zoology, botany, physics, chemistry, comparative anatomy, &c., being taught the veterinary students by the professors of the faculty of medicine. Before being admitted to the Veterinary Institutes of Russia, the candidate must have passed successfully through the six classes of the Gymnasium† (which comprise, in addition to other subjects, a course of rhetoric) or an Industrial College;‡ if the latter, the candidate must furnish a special proof of his knowledge of the Latin language. The period of study in the Veterinary Institute is four years.

To become a veterinary surgeon in Russia, therefore, requires the same primary instruction, and the same period of study, as it does to become a doctor, advocate, or barrister, or

* The *privat-docenten* in the German Universities are young men who have won distinction as scholars, and lecture on their own peculiar subject; they look forward to being made extra professors, and afterwards ordinary professors. Their promotion is mainly dependent on their merits and aptitude for original research.—G. F.

† The Russian Gymnasium has its counterpart in the Lyceum of France and the nearest approach to it in England is, perhaps, the London University.

‡ We have nothing analogous, I think, to the Industrial College in this country. It has its analogue in the Ecole Industrielle of France.

other of the more learned professions. Notwithstanding this the institutes are well attended; for the Government does not abandon the graduate when he has obtained his degree and goes into the world. On the contrary, it protects him; and whether he enters the army or remains in civil life, it creates an honorable position for him, in which he not only gains a comfortable livelihood, but consideration and distinction. There is no difficulty whatever in getting attached to one of the numerous administrations of that mighty empire, to which his special knowledge is invaluable.

In this way Russia hopes in a short time to have placed throughout its vast dominions, a sufficient number of the most highly-trained veterinarians that ever issued from colleges, whose services will not only be of advantage to her immense population in the suppression of such serious contagions as the Cattle-plague and Anthrax; but who will earnestly and successfully cultivate their special science, and thus benefit the whole world. The advantages already conferred by Russia in this direction put to the blush countries whose empire is as large, and whose interests in veterinary science should be much greater.

EXPERIMENTAL TERATOLOGY.

In the *Compte Rendu* of the French Academy of Sciences for November, 1873, M. Dareste describes a series of interesting experiments in teratology which carry us beyond the mere description and classification of types of monstrosities. Following out the memorable experiments of Geoffroy Saint-Hilaire, Dareste has succeeded in creating the object of his researches, and bringing under direct observation the evolution of the majority of the simple types of monstrosities. To this end he has adopted four modes of procedure with regard to the fecundated eggs he has experimented with: the vertical position of the eggs, which were submitted to artificial incubation; the diminution of the porosity of the shell by more or less impermeable varnishes; the contact of the egg with circumscribed warmth at a point in the vicinity of the *cicatricula*; lastly, the employment of temperatures a little superior or inferior to that of the normal circulation. The results obtained in this way, however, cannot always be foretold.

The principal conclusions at which Dareste arrived are as follows: Monstrosities always have their origin in that period of embryonic life when the embryo is entirely composed of a homogeneous blastema; arrest of development is

the general process occurring in the formation of simple monstrosities; arrest in development of the amnion determines, according to the parts involved, the *Cyclopia*, *Symelia*, *Celosomia*, &c.; cessation of development of the vascular area determines the formation of the *Anencephalus;* the double monstrosities in birds never originate from the fusion of the two primarily distinct vitelli, but from two embryos developed on a single cicatricule, and enveloped in the same amnion.

These researches acquire a grand character of generality, although only made on birds, seeing the identity of the teratological types in mammalia, birds and fishes—an identity which is a necessary consequence of the unity of type in animals pertaining to the offshoots of the vertebrata.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD JANUARY 6TH, 1875.

Present—The President, E. Coleman Dray, Esq., in the chair; Professors Simonds and Pritchard; Assistant-Professor Axe; Messrs. Harpley, Moon, Cheesman, Moore, Woodger, Cox, Field, Colonel Sir. F. Fitzwygram, and the Secretary.

The Secretary read notice convening the meeting.

The minutes of the previous meeting were read.

Professor Simonds complained that there was a great deal of matter published in the *Veterinarian* which did not appear in the minutes, and that there were some important letters in the minutes which were not published in the *Veterinarian*. The most important omission, he thought, was the letter of Messrs. Loch and Maclaurin in which they expressed an opinion that the proposed Charter of the Royal Veterinary College did not infringe upon or interfere with the rights and privileges of the Royal College of Veterinary Surgeons. He did not think it fair to the profession that the letter in question should have been withheld. He therefore took exception to the minutes.

After some conversation and explanation by the members of the Publication Committee the minutes were approved.

Correspondence.

The Secretary stated that letters had been received from Messrs. Cartwright, Naylor, and Mayer, regretting their in-

ability to attend the meeting. Mr. Mayer, in his letter, referring to the notice of motion given by Mr. Fleming, expressed his opinion that some honorary distinction like that of an Associate of King's College might be granted to Members of the Royal College of Veterinary Surgeons, under the provisions of the existing Charter. He thought that the question should be submitted to the Parliamentary agents.

The Secretary laid before the Council a pamphlet entitled 'The Transmissibility of Tuberculosis' which had been presented by Mr Fleming.

On the motion of Mr. Harpley, seconded by Mr. Moore, a vote of thanks was awarded to Mr. Fleming.

The Secretary stated that he had received a letter from Mr. Fleming, enclosing a paragraph from the *Standard* newspaper respecting Michael Clifford, who had been brought before the magistrate for an unprovoked assault, and who had styled himself a veterinary surgeon.

The Secretary informed the Council that he had written to the editor informing him that Mr. Clifford was not a Member of the Royal College of Veterinary Surgeons.

A letter was also received from Mr. Tombs, enclosing a report from the *Wilts and Gloucester Standard* stating that a Mr. Pettifer, who had been charged with being drunk and disorderly, had styled himself a veterinary surgeon.

The editor was informed that the accused was not a Member of the Royal College of Veterinary Surgeons.

Letters were received from the several members of the Board of Examiners in London approving the arrangements made for the Christmas Examinations, commencing December 17th.

A letter from Dr. Dunsmure was read stating that the examinations in Scotland had taken place on December 22nd and 23rd.

Examinations.

The report stated that at the examination which took place in London on the 17th December, 6 candidates passed the "*First Examination,*" and 3 were rejected.

On the 18th December, 6 passed and 3 were rejected.

On the 19th December, 8 passed and 1 was rejected.

On the 22nd December, 6 passed and 3 were rejected.

The report of the Court of Examiners also stated that on the 21st December 7 passed their "*Second or Pass Examination*" and obtained their diplomas, and 2 were rejected.

A letter was read from Dr. Dunsmure dated 26th December,

enclosing a report of the examinations in Scotland which took place on the 22nd and 23rd December, from which it appeared that in Edinburgh 7 candidates presented themselves for the "First Examination" (2 from the Royal College and 5 from the New), of whom 1 candidate was rejected, and the others passed. In Glasgow 8 students were examined for the "*Pass Examination*," (6 from the Glasgow School and 2 from the New College), all of whom were found qualified and obtained their diplomas,

The Secretary read the names of the students who had passed and those who were rejected.

The Secretary stated that in consequence of information received from Dr. Dunsmure he had written to Mr. Tennant asking him whether he would be able to continue his services at the Examining Board. A letter had been received from Mr. Tennant in reply, in which he stated that after consulting the highest medical authority in regard to his eyes he regretted to say that there was little hope of his sight being improved, and that having due regard to the interests of the Council he felt it his duty to resign his seat at the Board in Scotland.

On the motion of Mr. Harpley, seconded by Mr. Moore, it was resolved that the resignation be accepted; and on the motion of the same gentlemen a vote of thanks was passed to Mr. Tennant, expressing the continued confidence of the Council in him, and regretting extremely the cause that compelled him to resign.

The Spring examinations for England were fixed to be begun in the week commencing Monday, 29th March, and for Scotland in April.

The obituary notice was read.

Financial Committee.

The report stated that the vouchers and receipts for payments during the preceding quarter had been examined and found correct. The quarterly balance-sheet was submitted, which stated that £200 had been placed to the deposit account, and that the present liabilities were £106 15*s.* 2*d.*, which the Committee recommended should be discharged.

The Secretary explained that the sum of £4 9*s.* 4*d.* had been credited last quarter to the Finance Committee by mistake in consequence of the bankers having blended the accounts of the College Fund with the general accounts of the College. The sum in question had been debited to the general account, which made the accounts quite correct.

It was moved by Mr. Fleming and seconded by Mr. Cheesman, "That the report and the quarterly balance-sheet of the Treasurer's account be received and adopted." —Carried.

Cheques were ordered to be drawn for the current expenses.

College Fund Report.

The report stated that letters had been received from the Treasurer on the subject of the investment of £1100 in the names of three Trustees. Also a letter dated October 31st, enclosing one from Sir Samuel Scott & Co., stating that they had purchased £1182 15*s.* 10*d.* Consols at 92⅞ in the names of Messrs. Field, Cartwright, & Balls. Seven additional names had been added to the list of subscribers. The balance at the bankers was £38 11*s.* 7*d.*, and this added to the investment made a total balance of £1221 7*s.* 5*d.*

It was moved by Mr. Moon, and seconded by Mr. Fleming, "That the report be received and adopted." —Carried.

Mr. Field drew the attention of the Council to the arrears of promised subscriptions not yet received, and thought that it would be advisable that reminders should be issued by the Secretary.

Parliamentary Committee.

Professor Simonds said he wished to call attention to the manner in which the last meeting of this Committee had been convened. On the evening preceding the holding of the meeting he had attended at the room of the Council in his capacity as an *ex-officio* member of the Court of Examiners, and had then an opportunity of seeing some of the members of the Parliamentary Committee, who never mentioned to him that a meeting was to be held on the following day. He also saw the Secretary, who never named the matter. He was therefore much surprised at receiving on the following morning, at about 11 o'clock, a notice by post that a meeting of the Parliamentary Committee would be held on the same afternoon at 3 o'clock. It appeared to him to be a most extraordinary proceeding that the President should summon a Committee to meet within an hour or two of the issuing of the notice. It was a question as to whether it was a legal proceeding to summon a Committee in such a hurried manner, and he thought that such a course of procedure was entirely unpre-

cedented. His object in laying the facts before the Council was to hear an explanation from the President, and also to prevent such a proceeding in future.

The President said he was not at all surprised at Professor Simonds calling for an explanation, and he would endeavour to give as full an account as he could of how it happened, but in doing so he should be compelled to bring before the notice of the Council some of his own private matters. On Monday, the 21st December, one of the examination evenings, he told the Secretary that he should be unable to attend in consequence of the death of his mother-in-law. Some of the newly appointed examiners were apprised of this by the Secretary in answer to their inquiries for him (the President) that evening, but their reply was, "He ought to have been here." They insisted upon having the Parliamentary Committee called together, and the Secretary either was asked or he volunteered to telegraph him. When he received the telegram on Monday evening after 8 o'clock he was very much surprised, but under the pressure put upon him he immediately wrote to the Secretary by the last post from Wandsworth to call the meeting together. He certainly thought with Professor Simonds that, if not illegal, it was an unprecedented act, and he did not entirely exonerate himself; but it was under pressure that he consented to such short notice being given for the summoning of the Committee. He hoped that, under the circumstances in which he was placed, his explanation would be satisfactory to the Council.

Professor Simonds said that, so far as the explanation had come from the President himself, he was perfectly satisfied, but he thought it was an extraordinary proceeding that the gentlemen who had urged the President to call the meeting should have kept him (Professor Simonds) entirely in the dark as to what they were doing.

Mr. Harpley explained that the Parliamentary Committee had been authorised to carefully watch the proceedings in reference to the obtaining of a Charter by the Royal Veterinary College, and he considered that when the Parliamentary Committee or any committees were placed in such a position it was their duty to assemble as often as might be necessary. He thought that even six hours' notice would be sufficient if the business were urgent, and, considering what had passed in reference to the obtaining of the Charter, he thought the matter sufficiently pressing to justify the Committee being called together on so short notice. In his opinion the number of members of the

Parliamentary Committee ought to be increased to something like half the number of the members of the Council. He was not aware of the circumstance that prevented the attendance of the President at the Committee, and if he (Mr. Harpley) had been guilty of any disrespect to him or the office which he held he begged to tender his apology.

After some further conversation and explanations the matter was allowed to drop. The consideration of the report was then proceeded with.

The President then stated that, in accordance with advice received from Mr. Cotton, Q.C., the following letter dated 16th December was sent to Professor Simonds:

"ROYAL COLLEGE OF VETERINARY SURGEONS,
"10, RED LION SQUARE, W.C.;
"*December* 16*th*, 1874.

"DEAR SIR,—Your letter of November 25th, in reference to the proposed Charter of Incorporation to the Royal Veterinary College, was laid before a Special Meeting of the Council of the Royal College of Veterinary Surgeons held on the 26th ultimo.

"I have to inform you that the Council resolved—'That the parliamentary agents be instructed to take counsel's opinion on the proposed Charter to the Royal Veterinary College.'

"I have further to inform you that we have received opinion from counsel. We shall feel obliged if you will be good enough at the next meeting of the Governors of the Royal Veterinary College to ask their assent to the following amendments to be inserted in Clauses 13 and 17 of the Charter of Incorporation now before Her Majesty's Privy Council:

"Clause 13, page 10, line 1—'and also shall be at liberty to appoint *any persons who have obtained the diploma of the Royal College of Veterinary Surgeons such Fellows and Licentiates of the said Royal Veterinary College, and also to appoint such Honorary and Foreign Associates of the last-mentioned College* as they may think proper, with such privileges and subject to such conditions as shall appertain to them respectively by virtue of any such bye-laws as aforesaid.'

"Clause 17, page 12, line 2—'true intent and meaning, or *so as to prejudice or to interfere with the rights and privileges granted by our said Charter to the Royal College of Veterinary Surgeons.*'

"These are the only alterations which the Council deem

necessary for an equitable adjustment between the rights and privileges sought by the Royal Veterinary College and those of the Royal College of Veterinary Surgeons.

"I am, dear Sir,

"Yours faithfully,

(Signed) "E. C. DRAY.

"Professor Simonds, Principal,
"Royal Veterinary College."

The following letter dated 31st December, 1874, which had been received in reply, was also read:

"ROYAL VETERINARY COLLEGE;
"*December* 31*st*, 1874.

"DEAR MR. PRESIDENT,—I beg to acknowledge the receipt of your letter of the 16th instant containing official information relative to the opinion of counsel on the clauses of the proposed Charter of Incorporation of the Royal Veterinary College which are supposed by some members of the Parliamentary Committee to affect the interests of the Royal College of Veterinary Surgeons.

"This letter shall in due course be laid before the Governors of the College.

"I am, dear Mr. President, &c.,

(Signed) "JAS. B. SIMONDS.

"E. C. Dray, Esq., President of
"The Royal College of Veterinary Surgeons."

A letter from the Secretary of State for the Home Department dated December 1st was read, acknowledging the President's letter.

Letter from Messrs. Loch & Maclaurin, of 4th December, enclosing draft case for the opinion of counsel subject to alterations, and requesting the attendance of the President, Secretary, and some members of Council, to attend a conference at Mr. Cotton's chambers was read.

Previous to the conference at Counsel's chambers Professor Simonds sent in the following protest against obtaining the opinion of Counsel.

"I hereby protest against any opinion of Counsel being obtained on the proposed Charter of the Royal Veterinary College, believing that the Council of the Royal College of Veterinary Surgeons has no right to seek it, as its privileges are in no way interfered with by the proposed Charter.

(Signed) JAS B. SIMONDS."

Dec. 7th, 1874.

The report stated that after the letter of Messrs. Loch & Maclaurin had been received a meeting of the Parliamentary Committee was held, when an amended case was prepared to be laid before Counsel. Subsequently another letter was received from Messrs. Loch & Maclaurin enclosing case and the following opinion of Counsel thereon:

1. I am of opinion that neither the 13th Clause, nor any other part of the proposed Charter directly infringes upon any rights or privileges secured to the Royal College of Veterinary Surgeons by their Charter.

2. I am of opinion that under Clause 13 the Royal Veterinary College would be at liberty to grant the honours therein mentioned to persons who have not obtained the diploma of the Royal College of Veterinary Surgeons, and that this might induce the public to consider persons who had not passed the examination required by the last-named College as duly qualified to practise as veterinary surgeons. This appears not to be intended by those who are applying for the Charter, and I think they should be applied to to consent to an amendment of Clauses 13 and 17 as altered by me. If they will not assent I think that the Royal College of Veterinary Surgeons should represent to the Privy Council the importance of not allowing persons to practise as veterinary surgeons without some test of their being qualified; and that, if the Charter is granted in the terms proposed, the titles of Fellows and Licentiates may be granted to persons who have not passed the examination required by the Royal College of Veterinary Surgeons, and that the public will thus be induced to believe that persons who have not satisfied the test required by the Charter of 1844 are duly qualified to act as veterinary surgeons, and to ask that the Charter be not granted unless Clause 13 and 17 are amended as suggested.

(Signed) HENRY COTTON.

At the conference held December 11th Mr. Cotton stated that he proposed to alter Clauses 13 and 17 to read as follows:

Clause 13, page 10—" and also shall be at liberty to appoint *any persons who have obtained the diploma of the Royal College of Veterinary Surgeons such Fellows and Licentiates of the said Royal Veterinary College, and also to appoint such Honorary and Foreign Associates of the last-mentioned College* as they may think proper, with such privileges and subject to such conditions as shall appertain to them respectively by virtue of any such bye-laws as aforesaid."

Clause 17, page 12—" true intent and meaning, *or so as to prejudice or to interfere with the rights and privileges granted by our said Charter to the Royal College of Veterinary Surgeons.*"

At a meeting of the Committee held on December 22nd the correspondence with the parliamentary agents and counsel's opinion with the proposed alterations were laid before the Committee and approved. The letter dated December 16th, from the President to Professor Simonds, written at the urgent request of Messrs. Loch and Maclaurin was also read. No acknowledgment having then been received to the above letter, the Committee deemed it advisable to address a letter to the Governors of the Royal Veterinary College at their next meeting.

Professor Simonds said that as his conduct in regard to the protest might appear strange he would give a word of explanation. No doubt he had assisted in preparing the case to be laid before counsel, but directly after the case was prepared an observation fell from one of the members of the Committee which led him at once to see that it was not unlikely fresh difficulties might hereafter arise, and that he should be placed altogether in a false position. Directly he saw this, he entered the protest but in the most friendly manner in order that he might stand right both with the Council and the Governors. He did so because he was convinced that the privileges of the Royal College of Veterinary Surgeons were in no wise interfered with, and in that view he was supported by the opinion both of the parliamentary agents and of the counsel. The alterations made by counsel he considered superfluous and unmeaning; they made the clauses no more binding on the part of the Royal Veterinary College than they were before. He thought it was a monstrous thing and a direct insult to the Governors of the College to suppose that such a body of gentlemen would seek by subterfuge to supersede the privileges of the Royal College of Veterinary Surgeons. For his own part, if he desired to infringe the privileges of the Council, he would rather be without the Charter than with it, and if he had power sufficient with the Governors he would then ask them simply to seek the protection of their property by the Charter, as they would be stronger without the other provisions than they would be with them. The Charter had been drawn up with the express purpose of elevating the profession and of increasing the standard of instruction, and he was very sorry to observe the spirit in which the Governors had been met. No one had been more honest and open and candid in the whole of his dealings with the Council than he had been, and he thought

that the Parliamentary Committee should have shown more confidence in him than they had lately done.

Mr. Fleming said that if the whole of the circumstances were fully known the Council, he was sure, would acquit the Parliamentary Committee of any unworthy aspersions that had been thrown upon them. Nothing was known of the application for the Charter until it was seen in the columns of a daily newspaper, and but for its being accidentally discovered it might have become a legal document ready to be carried into operation at any moment. A copy of the Charter was obtained, and it was found that in one of the clauses of the prayer of the petition that the Royal College of Veterinary Surgeons was distinctly specified, and that certain degrees and licences were sought to be obtained by the Governors of the Royal Veterinary College, but it was found in the Charter itself that in Clause 13 all allusion to the Royal College of Veterinary Surgeons was omitted. It was a well-known fact that no medical school in this country conferred fellowships or licences. As he understood the meaning of a licence, it was a right or power to practise a profession; and therefore what other construction could have been put upon the Charter than that the Royal College was in danger? Every member was profoundly jealous of the rights and privileges of the Royal College, and the Parliamentary Committee and the Council had acted in the matter with good faith, honour, and candour. He hoped, therefore, that the Governors of the Royal Veterinary College would acquit the Council of any unworthy motives in the course it had adopted in this matter.

Mr. Harpley said that as a member of the Parliamentary Committee he had a few words to say to supplement what he said at last meeting. The Council as well as himself were taken by surprise when they heard of the application for the Charter, and at its being in such a forward state. The Council were not in a position at the time to consult their solicitor, Mr. Wilkinson, as he was engaged in drawing up the Charter, and therefore their only course was to apply to the parliamentary agents. In the Charter, the Royal Veterinary College distinctly asked to have power to grant honours and to make licentiates—privileges which were never granted to any of the schools in the medical profession, and it did not appear that in Clause 13 the Governors were compelled to apply these honours to those students who had previously obtained the diploma of the Royal College of Veterinary Surgeons. He had conferred with a gentleman on the matter, who said to him, "As a lawyer, there is nothing illegal. Speaking as a man of the world, it is sufficient to

tell me they can interfere with you; if they have got this power to make a licentiate or confer a degree, their students may set up in contradistinction to yourselves, and I think you should endeavour to obtain a saving clause so that these degrees should not be granted to any one who has not obtained the diploma of your College." At the present time there was a movement taking place among the medical profession, not only to prevent power being granted to any of their teaching schools to make licentiates or grant degrees, but also to introduce into next Parliament an Act for what they called concentrating their whole examining universities under one proper system. The Royal College of Surgeons in England—the largest licensing body in this country—was to apply to Parliament with this object; and when he inquired as to what they thought with reference to the proposed Charter, they told him that they did not think it was right that a teaching school should have this power, and that the Council ought to oppose it. He acquitted Professor Simonds and the Governors of the Royal Veterinary College of any intention to act antagonistic to the profession, but at the same time the Council, acting for the body corporate, were bound to watch the interests of the profession. Unless the clause suggested by counsel were altered, the school at Camden Town would compete with the Royal College in granting degrees. He thought that teaching schools should not be allowed to grant degrees at all, and in his opinion the Council was quite justified in making every inquiry in order to be satisfied that there was no infringement upon their rights.

Mr. Cox said, in support of Mr. Harpley's observation, that it was the opinion of all the members of the Council that there was no antagonistic feeling on the part of Professor Simonds towards the Council, and that the omission in the clause referred to was an oversight. The Council were now only asking to have that omission supplied.

Mr. Moore asked if the Royal Veterinary College could not grant those degrees they asked for without a Charter.

Professor Simonds wished that the Council would understand the difference between an honour and a degree. No Body could grant a degree save and except a university, and the Royal College of Veterinary Surgeons was a university.

Mr. Moore again asked if the Royal Veterinary College could not grant honours without a Charter. As stated by him at the last meeting, the whole of the medical profession

were asking for a single diploma, and he thought it was very singular that, as the Royal College of Veterinary Surgeons had that privilege already, the Royal Veterinary College was seeking a Charter of their own, so as to separate the two, as it were. Any one that obtained the licence from the Royal Veterinary College could go into the country and practise, and the diploma of the Royal College would never even be inquired after. He contended that the Royal College of Veterinary Surgeons had already got what really the whole medical profession were now seeking to obtain, namely, to grant one diploma, and one diploma alone.

Professor Simonds said that all the Royal Veterinary College was asking with reference to the Charter was to have a power to do by Charter that which they could do without it. At present they had the power to grant fellowships and to make persons licentiates or honorary associates, or to give them any other title they thought fit, and in the event of the Charter being refused these honours would still be granted to all the students whom the Governors thought worthy. The only thing the Royal Veterinary College could do by the obtainment of the Charter was to grant such honours and distinctions to the students after they had become members of the Royal College of Veterinary Surgeons, and instead of having any opposition from the Council they ought to have every assistance from them, as it would be a most important step towards elevating the profession.

After some desultory conversation,

Mr. Harpley moved—

"That the Council considers it advisable to follow the advice of counsel that the following letter should be sent to the Governors of the Royal Veterinary College:"

"ROYAL COLLEGE OF VETERINARY SURGEONS,
"10, RED LION SQUARE, W.C.;
"*January 7th*, 1875.

"*To the Governors of the Royal Veterinary College.*

"MY LORDS AND GENTLEMEN,—It having recently come to the knowledge of the Royal College of Veterinary Surgeons that you have applied to the Government for a Charter of Incorporation (with a view to hold land, and in general to benefit your College), they obtained a copy of the proposed Charter, and it is feared that by Clause 13 you would (if the Charter be granted) have power to confer degrees and make licentiates without your students having pre-

viously obtained the diploma of their College. The Council of the Royal College of Veterinary Surgeons, feeling that they are responsible to the body corporate that no infringement of their rights and privileges should occur, have obtained counsel's opinion on your proposed Charter.

"The result of that opinion leads them to believe that should the Charter you now seek be granted their functions as a university would be materially interrupted.

"The Council, however, feel confident that it cannot be your intention to clash with them, or in any way to interfere with the provisions of their Charter obtained in 1844, and which has proved so beneficial to the public.

"They therefore beg to express the hope that you, the Governors of the Royal Veterinary College, will take the subject of this letter into consideration, that the amendments suggested may be sanctioned.

"Appended is a copy of the clauses that the Council of the Royal College of Veterinary Surgeons wish to have considered with their counsel's suggested alterations.

"I have the honour to be, &c.,

(Signed) "ED. COLEMAN DRAY,

"*President.*

"Clause 13—'We further declare that the number of the subscribers of the said body, politic and corporate, shall be indefinite, with such individual privileges and subject to such conditions as shall appertain respectively unto each by virtue of these presents, or by virtue of any bye-laws to be made as hereinafter appearing under the authority of these presents; and we declare that the Governors shall be empowered to confer upon and grant to such of the students of the said College as they shall think fit annual or other exhibitions, scholarships, medals, and other prizes and certificates of distinction, and shall be at liberty to appoint *any persons who have obtained the diploma of the Royal College of Veterinary Surgeons* such Fellows and Licentiates of the said Royal Veterinary College, *and also to appoint such Honorary and Foreign Associates of the last-mentioned College* as they may think proper, with such privileges and subject to such conditions as shall appertain to them respectively by virtue of any such bye-laws as aforesaid.'

"Clause 17 is as follows:—'And we do will and declare that such President, Vice-Presidents, Governors, and Treasurer, shall have power from time to time to enact such bye-laws as they shall think desirable, so that these confirm

with the tenor of these our Letters Patent for carrying out the objects of the said Royal Veterinary College. But we do hereby expressly declare it to be our Royal will and pleasure that no bye-laws shall be made by virtue of this our Charter in opposition to its general scope, true intent, and meaning, *or so as to prejudice or interfere with the rights and privileges granted by our said Charter to the Royal College of Veterinary Surgeons.* And further, we do hereby declare that no bye-law shall be of any validity excepting the same shall have been first approved of in writing by the Lord President of our Council for the time being.'"

Mr. Fleming seconded the motion, which was unanimously agreed to.

In reply to the President,

Professor Simonds stated that there would be a meeting of the Governors of the Royal Veterinary College on the following Tuesday, and that, in all probability, a reply would be sent to the letter a day or two afterwards.

On the motion of *Mr. Moore*, seconded by *Mr. Harpley*, it was resolved, "That a special meeting of the Council be summoned to receive the reply to the letter."

On the suggestion of *Mr. Harpley*, the names of Sir Frederick Fitzwygram and Messrs. Cox and Cheesman were added to the Parliamentary Committee.

Mr. Fleming stated that, owing to the advanced hour of the evening, he would postpone the motion of which he had given notice to the next meeting of Council.

A memorandum was read from Colonel Fitzwygram, in which he stated that he proposed to give to the Council £105 annually, to be divided into prizes, not exceeding three, to be competed for by the students of the different veterinary schools, the examinations to take place in the spring of the year, and the date to be fixed by the Council. The memorandum also suggested many minor details as to the appointing of examiners and the subjects to be chosen for competition.

Mr. Fleming moved a vote of thanks to Colonel Fitzwygram for his liberal offer.

Mr. Harpley seconded the motion, which was carried with acclamation.

Mr. Harpley then moved—

"That a Committee be appointed to examine the propositions made by the donor and to draw out a scheme, and the whole of the members of the Examining Board should form that Committee."

Mr. Moon seconded the motion, which was carried unanimously.

Mr. Harpley moved, and *Mr. Cox* seconded—

"That Sir F. Fitzwygram nominate his examiners for the first year."

The motion was unanimously carried.

The President gave notice that at the next quarterly meeting he would move that the annual meeting be held at 12 instead of 1 o'clock.

This concluded the business, and the Council adjourned.

SPECIAL MEETING OF COUNCIL, HELD JANUARY 21ST, 1875.

Present.—The President, E. C. Dray. Esq., in the chair; Professors Simonds, Pritchard, and Williams; Messrs. Balls, Harpley, Cartledge, Cheeseman, Greaves, Moore, Gowing, Field, Cartwright; Colonel Sir F. Fitzwygram; and the Secretary.

The Secretary read the notice convening the meeting and also the minutes of the previous meeting.

Sir F. Fitzwygram explained, in reference to his memorandum which was entered on the minutes, that he had left it to the examiners to fix the number of marks, and that he should like that part which referred to the marks expunged.

By consent of the Council this was accordingly done.

The minutes were then confirmed.

Correspondence.

A letter was read from Mr. Mayer stating he was unable to attend the meeting in consequence of the death of an aged relative.

A letter from Mr. Fleming was read, stating that his duties prevented his attending the Council meeting, and wishing to defer bringing forward the motion of which he had given till next meeting of the Council.

Election of Scotch Examiner.

A letter was received from Prof. McCall recommending Mr. Thomas Campbell, M.R.C.V.S., Kirkcudbright, and Mr. H. E. Wilkinson, M.R.C.V.S., of Newcastle, to act in room of Mr. C. Tennant, resigned.

Letter from Prof. Williams recommending either Mr. H. E. Wilkinson, of Newcastle, or Mr. C. Hunting.

Letter from Professor Walley recommending Mr. John Borthwick, Aberdeen, or Mr. Thomas Thomson, Sunderland.

Mr. Cartledge proposed that Mr. Henry E. Wilkinson, of Newcastle, be elected to succeed Mr. Tennant.

Mr. Harpley said he had received a notice from Mr. Fleming requesting him in his absence to put forward the name of Mr. Thomas Campbell as a recommendation from Professor McCall, but as he found that Professor McCall had also named Mr. Wilkinson, whose name was then before the Council, he would withdraw Mr. Campbell's name, thinking that if Mr. Wilkinson were elected it would meet Professor McCall's views.

On the ballot being taken it was found that Mr. Wilkinson was unanimously elected.

The Secretary said he had received from Professor Simonds a letter enclosing one from Professor McCall, addressed to the editors of the *Veterinarian*, in reference to a student, Mr. Michael John Tracy, who was reported to have passed his "second examination" at the New Veterinary College, Edinburgh, instead of at the Glasgow Veterinary College.

Professor Williams said he would trouble the Council with a little explanation of the matter, about which he thought there had been some irregularity. Tracy had joined at the old College, and followed him (Professor Williams) out of that College. He was rejected on his *first* examination in July, 1873, but passed it at the following Christmas. He stayed for some time with him during the winter session after passing his *first* examination, and then commenced practising in Ireland, where he styled himself a member of the Royal College of Veterinary Surgeons before he had obtained his diploma. About a month previously to the commencement of the present session he wrote, asking if he (Professor Williams) would give him a certificate to pass his *final* examination at Christmas, as he wanted to complete his education with him. A reply was sent to the effect that he could not possibly be allowed to pass his *final* examination at Christmas, but if he returned in January he would be qualified for his final examination in April. He (Professor Williams) went to Glasgow at the time of the December examination, and to his surprise found Tracy seated at the table being examined. He ascertained from Professor McCall that he (Tracy) had been in Glasgow almost since the commencement of the session; he had studied in Glasgow certainly about a month. These were

the circumstances, and if Professor McCall claimed him as his own student he was quite welcome to do so.

After some further explanation by Professor Williams,

Professor Simonds said he considered that the examination in question was a gross violation of the bye-laws, and Professor McCall should be called upon to explain how it was that this student had been examined not having been in attendance at his school "one winter session" after having passed his *first* examination. If Tracy had been in attendance at Professor Williams's school subsequently to passing his *first* examination at Christmas until the end of the session, and if he had returned to Professor Williams, he would have been eligible at Christmas; but instead of this he went to another school, and it could not therefore be attested that he had been the full time in attendance.

Mr. Gowing thought that there should be some uniform understanding between the schools.

Mr. Moore concurred in the views expressed by Professor Simonds, and thought that Professor McCall should be written to, asking how the irregularity took place.

Mr. Greaves thought it was a serious question, and that such irregularities should be put a stop to as soon as possible. He had foreseen some years ago that these irregularities would be likely to take place, and at that time no one was more anxious than Professor Williams that the Colleges should act in concert, and that no student should be allowed to be examined at one College without the consent of the other Colleges. It was very desirable that the three Colleges should act in concert.

Sir F. Fitzwygram also thought that the irregularity was a most serious matter. If it was possible for the principal of any school to sign a certificate that a student had studied the proper time and that he really had not, then the Council would begin to lose confidence. He begged to move "That a Committee be appointed to inquire into the whole matter, consisting of Messrs. Field, Harpley, Cartledge, Fleming, Hunt, and Sir F. Fitzwygram; three to form a quorum."

Mr. Balls seconded the motion.

Professor Williams suggested that the Committee make particular inquiry as to whether the examinations were as strict in Glasgow as they were in Edinburgh, leaving London out of the question althogether.

Mr. Cartledge, as far as his experience went as a member of the examining body in Edinburgh and Glasgow, thought that the examinations in both those places were, as nearly as possible, similar.

Mr. Moore said it seemed to him that the motion before the Council was equal to a vote of censure upon the Glasgow Examiners.

After some further conversation the motion on being put to the Council was carried.

It was arranged that the Committee meet on Saturday next, at 2 o'clock.

The Secretary next read a letter from Professor McCall dated January 19th, regretting his inability to attend the special meeting, and stating that under the existing constitution of the Royal College of Veterinary Surgeons members of Council residing in Scotland knew little of what was being discussed unless by taking a journey to London.

Judging of the proceedings of Council from the *Veterinarian* in reference to the proposed Charter of Incorporation applied for by the Governors of the Royal Veterinary College, a copy of which, in his opinion, should have been sent to each member of Council as well as to the principals of the respective Colleges, he considered that the power of granting degrees should not be vested in the teaching Colleges, as such power is open to abuse.

He thought that the time had now arrived in which a higher degree than mere membership should be conferred upon eminent members of the profession, and that a supplementary Charter should be obtained and the constitution and representation of the Royal College of Veterinary Surgeons be remodelled, failing which a renewed application will doubtless be made for a Charter for Scotland and Ireland.

In conclusion, he would prefer the granting of degrees to remain vested in the Royal College of Veterinary Surgeons, and advised that some concession should be made to the profession in Scotland.

The Proposed Charter.

The Secretary read the following letter from Professor Simonds on the part of the Governors of the Royal Veterinary College :

"ROYAL VETERINARY COLLEGE, CAMDEN TOWN, N.W.,
"LONDON; *January 13th*, 1875.

"DEAR MR. PRESIDENT,—I have the honour to forward you a copy of a resolution which was passed at a meeting of the Governors of the Royal Veterinary College held yesterday having reference to some verbal alterations, named in your letter of January 7th, which the Council of the Royal College

of Veterinary Surgeons is desirous of having made in Clauses 13 and 17 of the Draft Charter of this Institution.

"I am, dear Mr. President, &c.,
(Signed) "JAS. B. SIMONDS.

"To E. C. Dray, Esq., President
of the Royal College of Veterinary Surgeons."

"Resolution. Moved by J. W. Bosanquet, Esq., Treasurer, seconded by Sir Paul Hunter, Bart.; carried unanimously—

"That the Governors have considered the alterations of the Draft Charter proposed in the letter of the President of the Royal College of Veterinary Surgeons, dated the 7th of January, 1875, and entertain no objection to the insertion of these alterations.

"C. N. NEWDEGATE, Esq., M.P., in the Chair."

Professor Simonds said that the Governors did not hesitate to pass the resolution which had been read. As a body of gentlemen they never, for one moment, thought of doing anything which would in any way interfere with the rights and privileges of the Royal College of Veterinary Surgeons, and of this he had always assured the Council from the beginning. He might, however, state that the Governors in passing the resolution were fully impressed that there was no necessity whatever for the words to be inserted, as in their opinion they did not make the Clauses more binding. The Governors, however, had acceded to the proposed alterations, in order to show that they had no wish to act contrary to the wishes of the Council. He complained that throughout the whole matter he had been treated with a want of confidence; and he defied any member of the Council to say that he had not been honest, open, and candid in his dealings with reference to the entire affair. He had had a great deal of trouble in the matter from beginning to end, and he would add that the Governors had not been very much gratified at remarks which had been made in reference to them at some of the previous meetings of the Council. He hoped, however, that any ill-feeling which might have arisen would be allayed.

Mr. Gowing thought that Professor Simonds should not take umbrage at what had been done, as the Council had only done what they considered was their duty as representatives of the body corporate in taking into consideration any matter which, in their opinion, was likely to interfere with the rights and privileges of the Royal College of Veterinary Surgeons.

Mr. Harpley, after giving a short account of what had transpired up to the present stage of the proceedings, said that the Council were generally of opinion that Clause 13 as originally proposed would override Clause 6, or, in other words, would give the power of conferring honours and making licentiates to the Governors of the College independently of the Council. No one was more loyal to the Governors of the Royal Veterinary College or its Secretary than himself, but when they asked for power to confer degrees and make licentiates, he felt it his duty to investigate the matter in order to see that the rights and privileges of the Royal College of Veterinary Surgeons were not infringed upon. A saving clause was asked for and had been granted; but he would go still further: he thought the Council should now obtain a legal opinion upon the altered Charter. His only wish was to protect the rights of the profession. There was not a teaching school in the medical profession that had the power of conferring degrees and making licentiates. The universities monopolised the power to do so, and, he thought, rightly so.

Mr. Moore said that, although he might have made some strong remarks at a previous meeting he did not mean any disrespect to the Governors of the Royal Veterinary College. At that meeting he stated that the Royal College of Veterinary Surgeons had already what the medical profession was seeking to obtain, namely, one united body and one diploma for all. It was quite clear, as Mr. Harpley had said, that if power were given to the Royal Veterinary College to grant degrees, it would be independent of the Royal College of Veterinary Surgeons altogether. He thought that the Council had taken the proper course in the matter in acting as they had done.

Professor Williams said it became a question whether the granting of the proposed Charter would elevate the profession. He thought the result would be that every teaching college in the country would ask for a Charter to empower them to grant fellowships and make licentiates. He considered that a fellowship amounted to a degree. The desire of the medical profession was to have one consolidated body which would be the great university of the profession and have the sole power of granting degrees and honours. On general grounds he thought the application on the part of the Governors of the Royal Veterinary College was a step in the wrong direction. It would cut away the very vitality of the profession as a growing body; and the increase and status of the body corporate and the rights and privileges of

the members of a liberal profession would be struck at by this application on the part of one school. If the suggestion had come in the shape of a rider to the existing Charter, to be applied for by the united schools, to enable the body corporate to grant honours and to put students to severe tests before they obtained those honours, it would have been a step in the right direction, and one which would tend to make the profession far better appreciated by the country at large. If the proposed Charter were granted, he should feel it his duty, however objectionable it would be to himself personally, to make a similar application. Before the matter went further he trusted that Professor Simonds would reconsider it, and that he would find a loophole by which all the grievances complained of in Professor McCall's letter would be done away with and the profession generally rendered more united.

Mr. Moore suggested that the proposed Charter should be abandoned, and that the whole of the profession—both in England and Scotland—should apply for such an Act of Parliament as would prevent those who were not of the profession from assuming the name of veterinary surgeons.

Mr. Cheesman said it appeared to him that although the proposed Charter only sought for the power to confer honours, prizes, rewards, and distinctions, yet the same principle was involved as in the granting of degrees. He could assure Professor Simonds that in the discussions which had lately taken place there was no discourtesy intended towards him on the part of the members.

Mr. Greaves said he felt much pleasure in thinking that the Governors had acceded to the alterations suggested by the Council; but, after all, he had much rather that the application for a Charter had never been made, for, if it were granted, it would necessitate the other schools to make a similar application, and the charters asked for by them might not be so much in accordance with the wishes of the Council as the one now sought to be obtained.

Mr. Gowing thought that after the statement which had been made by Professor Williams it was the duty of the Council to oppose all charters that may be applied for by each and all of the teaching schools.

Mr. Harpley said that it appeared, from what had been stated by Professor Williams, that the Council had not done wrong in taking the steps they had in the matter. He had no doubt that other schools would apply for charters, but he thought it was the duty of the Council to follow, as much as possible, the example of the medical

profession in preventing the schools from making licentiates. If necessary, he should propose a resolution.

Professor Simonds asked if it was fair on the part of the Council, after they had obtained from the Governors all they had asked for, to seek for anything beyond it, especially as every legal opinion they had had on the subject showed that their privileges were not interfered with.

Mr. Cartledge thought that after the strong feeling which had been manifested by the Council in opposition to the Charter, it would be a graceful act on the part of the Governors to withdraw it.

The Chairman moved—

"That the letter and resolution from the Governors of the Royal Veterinary College as now read be entered on the minutes."

Mr. Greaves, in seconding the motion, took occasion to observe that if the proposed Charter were granted, he was afraid the Highland and Agricultural Society of Scotland would also apply for a Charter and would bring such opposition to bear upon the Council as they would be unable to resist. This would have the effect of creating a division in the profession that had not existed for twenty years.

The motion was then put and carried.

Mr. Cartledge then moved—

"That in the opinion of this Council the granting of a Charter such as is about to be applied for by the Governors of the Royal Veterinary College will prove detrimental to the interests of the general profession, and that the Governors be requested to withdraw their application."

Mr. Moore seconded the motion.

Sir F. Fitzwygram said that, as the Governors of the Royal Veterinary College had accepted the terms offered by the Council, they, as men of sense and gentlemen of honour, were bound by their own act to accept those terms. He thought the Council would be stultifying themselves if they now receded from those terms. He begged to move—

"That the letter and resolution from the Governors of the Royal Veterinary College be acknowledged with thanks."

Mr. Cartwright seconded the motion.

Mr. Cheesman expressed his concurrence with Sir F. Fitzwygram's views.

Mr. Cartledge then, with the consent of Mr. Moore, the seconder, withdrew his motion.

The motion of Sir F. Fitzwygram was then put and carried.

Sir F. Fitzwygram's Committee.

The words "of the Council," inadvertently inserted in Sir F. Fitzwygram's motion for the appointment of a Committee to consider the scheme laid by him before the Council at last meeting, were, at the request of Sir. F. Fitzwygram, ordered to be struck out. The motion would now stand as follows:

"That a Committee, to consist of the whole of the members of the Examining Board, be appointed to consider the propositions made by the donor, and to draw out a scheme."

The Council then adjourned.

ROYAL COLLEGE OF VETERINARY SURGEONS. COLLEGE FUND.

At a quarterly meeting of the Council of the Royal College of Veterinary Surgeons, held January 6th, 1875, the College Fund Committee brought up their report, which stated that in October last £1182 15*s.* 10*d.*, consols, had been purchased in the names of the three Trustees, bearing interest from that date.

The Council and the Committee beg most respectfully to call attention to the List of Subscribers, and earnestly hope that their appeal to the profession will not remain unanswered by the large number of practitioners in the United Kingdom of Great Britain and Ireland, who have already obtained a professional status by the provisions of the Charter, and are likely to secure further results by its general application.

Subscriptions may be sent to the Secretary (Mr. Wm. Henry Coates) either by Post Office Orders, made payable at the District Post Office, High Holborn, or by cheques crossed 'Sir Samuel Scott, Bart., & Company, London.' An official receipt will be forwarded in return."

The following List of Subscribers to ehe Fund for Building or purchasing saitabte premises for the offices of the College is complete to the present date, September 30th, 1874.

	£	*s.*	*d.*
Donation originally given by T. W. Mayer, Esq., in 1849	37	14	7
Interest thereon	27	2	6
Adlard, J. E., Esq., London . . .	1	1	0

	£	s.	d.
Arnold, Messrs. & Sons, Smithfield, London	5	5	0
Axe, J. W., Assist.-Professor, R.V.C., London	2	2	0
Axe, Joseph Machin, Esq., Brixton	1	1	0
Balls, Messrs. G., and Son, Brixton	21	0	0
Barford, John Davis, Esq., Southampton	2	2	0
Barker, William, Esq., Middlesborough	2	3	0
Batt, Hartley Thos., Esq., London	10	0	0
Bentley, William, Esq., Margate	1	1	0
Bland, Wm. Colley, Esq., Newbury, Berks	5	0	0
Broad, James C., Esq., London	10	0	0
Broad, Alfred, Esq., St. John's Wood, London	2	2	0
Broughton, William, Esq., Leeds	2	2	0
Brown, G. T., Professor, R.V.C., London	20	0	0
Brown, John, Esq., London	2	2	0
Burgess, Willows & Francis, Messrs., London	5	5	0
Burrell, Messrs. T., and Son, London	10	10	0
Burt, Messrs. W. and W., Brighton	5	0	0
Carless, Messrs. J., and Son, Stafford	2	0	0
Carter, Joseph Shepherd, Esq., Bradford	2	2	0
Cartledge, B., Esq., Sheffield	21	0	0
Cartwright and Hill, Messrs., Wolverhampton	50	0	0
Case, Edward, Esq., Fakenham, Norfolk	1	1	0
Cave, George, Esq., Liverpool	5	5	0
Cheesman, John Jas., Esq., Wandsworth	5	0	0
Child, James, Esq., Hackney	5	0	0
Clark, James, Esq., Cupar Angus, Perth	1	0	0
Clark, William, Esq., Islington.	3	3	0
Coates, Mr. W. H., London	5	0	0
Coe, Joseph, Esq., Stoke-upon-Trent	2	2	0
Coleman, Edward, Esq., London	2	2	0
Collings, John Jas., Esq., Plymouth	2	2	0
Collins, Jas., Esq., Staff V.S., Dublin	5	5	0
Constant, S. P., Esq., 5th Dragoon Guards, Dundalk	5	5	0
Cooper, William, Esq., Berkhampstead	5	5	0
Cope, Alexander C., Esq., London	5	5	0
Corby, Thomas, Esq., Hackney	2	2	0
Cox, John Roalfe, Esq., London	10	0	0
Crowe, W. A., Esq., London	1	1	0
Cuthbert, John, Esq., Leeds	2	2	0
Death, William, Esq., Army Service Corps, Aldershot	1	1	0
Dray, E. C., Esq., Wandsworth	5	0	0
Fahey, John, Esq., Nenagh County, Tipperary	2	2	0
Farrow, Wm. Hastings, Esq., London	5	0	0

	£	s.	d.
Field, William, Esq., London	100	0	0
Field, William, Esq., jun., London	100	0	0
Fitzwygram, Col. Sir F. W., Bart., London	210	0	0
Fleming, G., Esq., Royal Engineers, Chatham	5	5	0
Freeman, James, Esq., Hull	1	10	0
Freeman, John, Esq., Hull	1	10	0
Freeman, Joseph, Esq., Keyingham, Hull	1	10	0
Fryer, John, Esq., Fleetham, Bedale	2	0	0
Gadsden, John W., Philadelphia, U.S.	5	5	0
Gill, Samuel, Esq., Hastings	1	1	0
Goodall, Henry John, Esq., Melton Mowbray	1	1	0
Gould, George Jas.,Esq., Southampton	2	2	0
Gowing, Messrs. T. W., and Son, London	10	0	0
Greaves, Thomas, Esq., Manchester	20	0	0
Gregory, John B., Esq., Portsmouth	2	12	6
Grice, Charles C., New York	5	5	0
Hammond, John, Esq., Bale, Norfolk	1	1	0
Harpley, M. J., Esq., Anonymous	5	5	0
Harpley, M. J., Esq., Royal Horse Guards	5	5	0
Harwood, Thomas, Esq., Liverpool	2	2	0
Hills, Osborn J., Esq., Leamington	5	0	0
Howard, John, Esq., Woolwich	1	1	0
Howard, Richard, Esq., Thetford, Norfolk	1	1	0
Hunt and Parker, Messrs., Birmingham	50	0	0
Jarvis, Frederick, Esq., London	10	10	0
Kennedy, Thomas, Esq., Wrexham	1	0	0
Kent, W. H., Esq., London	5	5	0
King, John Thos., Esq., Bournemouth, Hants	1	1	0
Lambert, John, Esq., 17th Lancers, Dublin	2	0	0
Lawson, Alexander, Esq., Manchester	5	5	0
Lepper, Messrs. H. and G. A., Son, Aylesbury	10	10	0
Longman, Geo., Esq., Cavalry Depôt, Canterbury	2	2	0
Lowe, Clement, Esq., London	2	2	0
Malcolm, John, Esq., Enniscorthy	2	2	0
Martin, John Bean, Esq., Rochester	2	0	0
Mavor, William, Esq., St. Leonard's-on-Sea	10	0	0
Mavor, Messrs. Alexander and F. J., London	50	0	0
Merrick, Thos. Jas., Esq., Northampton	5	5	0
Moon, James, Esq., Kingston-on-Thames	5	0	0
Moore, James, Esq., London	5	0	0
Moore, W. J., Esq., Junior Army and Navy Club	10	10	0
Moss, Michael, Esq., Sittingbourne, Kent	1	1	0
Naylor, M. E., Esq., Wakefield	10	0	0
Nettleship, Edward, Esq., London	2	2	0
Olver, Harry, Esq., Tamworth	1	1	0

	£	s.	d.
Olver, Thomas, Esq., Truro	1	1	0
Overed, J. D., Esq., Blofield, Norfolk	2	2	0
Owles, Alfred J., Esq., Staff V.S., Aldershot	1	1	0
Paton, Thomas, Esq., Army Service Corps, Dublin	1	1	0
Pearce, J. H., Esq., Whitchurch, Hants	1	0	0
Peele, Henry, Esq., West Hartlepool	2	2	0
Penhale, William, Esq., Barnstaple, Devon	1	1	0
Penhale, Wm., Esq. junr., Holsworthy, Devon	1	1	0
Price, Thomas S., Kennington Cross	2	2	0
Prudames, Alfred, Esq., Great Berkhampstead	2	2	0
Ritchie, James, Esq., Gateside, Kincaldrum	5	0	0
Robertson, William, Esq., Kelso, Roxburghshire	3	3	0
Roots, William, Esq., London	2	2	0
Rowe, James, junr., London	5	0	0
Simonds, J. B., Professor, Principal R.V.C., London	30	0	0
Smith, William, Esq., Norwich	5	0	0
South, George, Esq., London	5	0	0
Stanley, Edward, Esq., Warwick	5	5	0
Stanley, Thomas, Esq., Edmonton	5	0	0
Taylor, James, Esq., Colchester	3	3	0
Taylor, William Baxter, Rotherham	2	2	0
Thomson, George, Esq., Horncastle	1	1	0
Walker, Alfred, Esq., Rugby	5	0	0
Wallis, W. S., Esq., Halstead	2	2	0
Wells, Thomas, Esq., Aeacondale, Norwich	1	1	0
Withers, Samuel Hicks, Esq., London	5	0	0
Withers, Henry, Esq., London	1	0	0
Withers, Alfred, Esq., London	1	0	0
Wooder, Joseph, Esq., London	10	10	0
Woodger, Joseph, Esq., jun.	10	10	0
Wragg, Francis W., London	10	10	0
Yorkshire Veterinary Medical Soeiety	50	0	0

A gentleman has offered to give £100 towards the fund, on condition that nine other members of the profession will subscribe not less than £100 each. Or the same gentleman will give £50 provided that nineteen others will subscribe a sum of not less than £50 each for the same purpose.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

The Privy Council have appointed Henry Morris, M.R.C.V.S., to be an Inspector under the Veterinary De-

partment of the Privy Council for the purposes of the above-mentioned Act, and to be the Veterinary Inspector at the Port of Kirkwall, in the place of James Connon, M.R.C.V.S., deceased. ALEXANDER WILLIAMS.

Veterinary Jurisprudence.

FOOT-AND-MOUTH DISEASE.

A FARMER HEAVILY FINED FOR FAILING TO REPORT.

MONDAY, January 18th, before Mr. W. J. Young, Mr. R. Oldham, and Mr. G. Pyman—at the *West Hartlepool Police Court*, a cow-keeper, named Thomas Robinson, at California, was charged with neglecting to report the presence of the foot-and-mouth disease amongst his live stock. He admitted the truth of the charge, but, through his solicitor, Mr. Todd, blamed a Mr. Souter, of Yarm, for the neglect.

Supt. Marley, the inspector, stated that on the 9th inst. he visited Mr. Robinson's farm and found four cows affected. When questioned, defendant said a qualified man had examined the animals, and he did not think there was any occasion to report them after that. Next day, Mr. Henry Peele, V.S., M.R.C.V.S., of West Hartlepool, was called in.

Mr. Peele now gave evidence. He stated that there were twenty cows in all. Four were undoubtedly affected. Others were recovering from the disease; and the disease must have been manifest for a fortnight.

In answer to Mr. Oldham, *Mr. Peele* added that the farm premises were in a disgracefully neglected condition. There was not much manure, but there was a large accumulation of stagnant water. The manure could propagate the disease, but it was only necessary to mix it with quick-lime.

In answer to Captain Young, *Mr. Peele* further said that milk from a diseased cow would be injurious. Pigs might die from taking it, or calves from suckling the parent; and children would suffer from its effects.

Mr. Marley informed the Court that defendant was contractor to the Union for the regular supply of milk to the inmates of the poorhouse.

Captain Young, in announcing the decision of the Court, said the magistrates could come to no other conclusion than that a very serious offence had been committed by the defendant, not only against the law, but also against the health of the people

who were supplied with milk produce. Four animals were affected with the disease; and others had been affected, and were progressing towards recovery. A state of things like that was fraught with imminent danger to the public, and was calculated to spread disease, and not improbably to result in fatal consequences. He made these observations for the benefit of every cow-keeper in the district who might fancy himself safe beyond the power of detection; and, in order that this case might lead all parties to exercise greater caution than ever, defendant would be fined, for each of the four animals, in the sum of £5, or a gross penalty of £20, and costs, which, in the total, amounted to £21 14s. 6d.—*Northern Echo.*

ROYAL VETERINARY COLLEGE.

Monitors.

The following Students have been appointed Monitors in Class A for the Second Term of the Winter Session, in the place of those who have passed their First Examination and entered on their studies in Class B:

Mr. G. A. Banham	Cambridge.
— L. C. Tipper	Balsall, Birmingham.
— W. F. Peacock	Durham.
— A. B. Daniel	Oldmeldrum, Aberdeen

Clinical Clerks.

The following Students have been elected Clinical Clerks for the Second Term of the Winter Session:

Mr. W. R. Hagger	Ashdon, Essex.
— C. J. Reynolds	Mansfield.
— W. Dixon	St. Helen's.
— W. E. Taylor	Bury St. Edmund's.
— J. F. Oliver	Derby.
— D. M. Storrar	Chester.
— H. D. Gibbings	North Lawton, Devon.
— E. Rivett	Blunston, Suffolk.

OBITUARY.

We have to record the following deaths:

Mr. Robert Marshall, M.R.C.V.S., *Half pay,* Royal Artillery. Diploma bears date April 28th, 1859.

Mr. James Allen, M.R.C.V.S., London. Diploma dated May 2nd, 1862.

Mr. Samuel Tremlett, M.R.C.V.S., Blackheath. Diploma dated May 17th, 1854.

THE

VETERINARIAN.

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Communications and Cases.

THE CANINE EPIZOÖTY IN GREENLAND.

By George Fleming, M.R.C.V.S., Royal Engineers.

In the *Veterinarian* for last September, in a paper on "The Geographical Extension of Rabies," I drew attention to the existence of a disease among dogs in Greenland which, in many of its more prominent features, closely resembled rabies. I also alluded to its wide prevalence, and the serious results that were likely to ensue with regard to the Esquimaux, whose existence, it may be truly said, depends upon that of their canine friends. Such a remarkable outbreak of disease has excited the deepest interest in me, not only from its pathological, but also because of its ethnological bearings; and I therefore seized the opportunity offered by the arrival in this country of Lieutenant Payer, of the Austrian Navy, who commanded an exploring vessel sent by his Government to the Arctic regions, and who came to give the Royal Geographical Society an account of his recent and perilous adventures in that desolate part of the world, to pursue my investigations. In reply to my inquiries, Lieutenant Payer courteously wrote as follows:—"It has given me great pleasure to receive your query. The interest you take in so peculiar a subject as canine welfare, is only another proof of the eagerness with which practical information concerning those regions is sought in this country. With respect to the animals you mention, I have to inform you that I learned

nothing more than the account given by Kane and Hayes [referred to in my paper in the *Veterinarian*]. From Greenland itself we had no dogs, nor did we come across any. The dogs we had were all procured in Vienna, and were Newfoundlands; they answered our purpose admirably. As to diseases, I can say nothing."

By taking his sledge-dogs from the Continent, and keeping them away from the Esquimaux dogs, Payer's teams escaped the malady; but as in the meantime it had been decided that an Arctic Expedition was to leave our own shores, and as it had also been the practice hitherto for our explorers to purchase sledge-teams in Greenland, I feared that the existence of the epizöoty might not be known in this country, and that dogs would be extremely scarce or not obtainable when our ships reached there, or that, if procured, great danger might be incurred. I therefore prepared a paper on the subject, which appears in the *Geographical Magazine* for this month (February), and it is the interest which attends the additional facts concerning the disease that the paper has elicited in that periodical from the pen of Dr. Robert Brown, F.L.S., one of the best authorities on Greenland and its fauna, which prompts me to seek their publication in our professional journal. Dr. Brown writes:—"To the critical observations of so eminent a veterinarian as Mr. Fleming, I can add nothing of any value. I will, therefore, best respond to your [the *Editor, G. M.*] invitation to state what I know of the Greenland dog disease by simply giving the following extracts from my papers on the Greenland mammalia ('Proc. Zoological Society of London,' 1868, p. 348):—'When the Greenland dogs die off, the Greenlander must become extinct, more certainly even than must the *Plain* Indian when the last buffalo is shot. It is impossible for him to drag home the seals, sharks, white whales, or narwhals, which he may have shot in the winter at the "strom-holes" in the ice, without his dogs, or for the wild native in the Far North to make his long migrations, with his family and household goods, from one hunting ground to another, without these domestic animals of his. Yet that sad event seems to be not far distant. About fifteen years ago a curious disease, the nature of which has puzzled veterinarians, appeared among the Arctic dogs, from high up in Smith's Sound down the whole coast of Greenland to Jakobshavn (latitude 69° 13′ N.), where the icefjord stops it from going further south; and the Government uses every endeavour to stop its spread beyond that barrier by preventing the native dogs, north and south, from com-

mingling. Kane and Hayes lost most of their dogs through this disease, and at every settlement in Danish Greenland the natives are impoverished through the death of their teams. It is noticed that whenever a native loses his dogs he goes rapidly down hill in the sliding scale of Arctic respectability, becoming a sort of hanger-on of the fortunate possessor of a dog-team. During the latter portion of our stay in Jakobshavn scarcely a day elapsed during which some of the dogs were not ordered to be killed, on account of their having caught this fatal epidemic. The dog is seized with madness, bites at other dogs, and even at human beings. It is soon unable to swallow its food, and constipation ensues. It howls loudly during the continuance of the disease, but generally dies in the course of a day, with its teeth firmly transfixing its tongue [tetanic convulsions]. It has thus something of the nature of hydrophobia, but differs from that disease in not being communicable by bite [to human beings], though otherwise contagious among dogs. The Government [of Denmark] sent out a veterinary surgeon to investigate the nature of the distemper; but he failed to suggest any remedy, and it is now being "stamped out" by killing the dogs whenever seized—an heroic mode of treatment, which will only be successful when the last dog becomes extinct in Greenland. Strange to say, the dogs in Kamschatka are also being decimated by a very similar disease; and in a recent communication received from that region, it is said that so scarce have dogs become that the natives do not care to sell them, and that 100 roubles have been refused for a team of six. Fortunately for the Kamschatkans, they have the reindeer as an ulterior beast of draught and burden.' Since writing the above I have made many inquiries in regard to this dog disease of Danish officers who had arrived from Greenland, but without adding much to my previous knowledge. The disease still prevails, but had not extended, when I last heard from Greenland, south of the icefjord of Jakobshavn. So careful were the Danes when I was in the country to prevent the dogs from Jakobshavn commingling with those of Claushavn on the other side of the fjord—for the disease is contagious whether the dogs are bitten or not—that during the winter, when any one wished to cross from Jakobshavn to Claushavn, and *vice versa*, the sledge did not go the whole way, but the traveller left it a little way from the shore, after which the dogs were driven home again. Some of our dogs from Claushavn which had accidentally got ashore at Jakobshavn were killed by order

of the governor, in case they should reach Claushavn in the winter over the ice, and spread the contagion among the then untainted dogs of that settlement. If the Arctic Expedition is determined to take dogs, I think, therefore, that they should endeavour to obtain them from uncontaminated districts, such as Egedesminde, Christianshaab, or Claushavn.

"In South Greenland the natives do not use the dog-sledge. It will, however, be found very difficult to obtain dogs in Greenland. The natives, with more prudence than they are usually credited with, refuse to sell them; nor do I believe that the Danish Government, in the interest of the natives, will be found willing to allow them to part with animals so essential to their welfare or even existence. If it had been practicable, the western shores of Davis Straits, where the disease has not yet reached, would most likely be found a locality where healthy, strong dogs could be more easily purchased than on the Greenland shores."

These facts furnished by Dr. Brown are particularly interesting at this time, and though I was in ignorance of his communication in the 'Zoological Society's Proceedings,' yet I was anxious that not only should our Arctic Expedition be guarded from loss and danger in this respect, but also that it should make this malady one of its objects of inquiry. This will be perceived from the following paragraphs of my article in the *Geographical Magazine*:—"It will be perceived that Payer, by taking his sledge-dogs from Vienna, escaped the loss which befel Kane and Hayes; and it is now a matter for serious consideration whether our own exploring expedition should not obtain its canine quadrupeds from other regions than Greenland, should sledge-work be anticipated. To say nothing of the danger incurred from the prosence of rabies among the dog-teams, the loss of the animals might prove a source of great embarrassment to the expedition at a critical moment, as it did in Kane and Hayes' explorations. Whatever be determined upon, however, it is to be hoped that, if the opportunity offers, careful inquiries will be made by our expedition with regard to this malady among the Greenland dogs, especially with regard to its nature, the amount of damage it has caused, and whether it has been communicated to the human species. Comparative pathology, no less than geographical discovery, have a more or less pressing interest in a subject of this kind."

REVISED LIST OF ENTOZOA, WITH NOTES AND REFERENCES.

By T. Spencer Cobbold, M.D., F.R.S., F.L.S., Professor in the Royal Veterinary College.

(*Continued from p.* 106.)

26. The Pork Measle (*Cysticercus cellulosæ*).—Although for some reasons it would be better to call this form of bladder worm *Cysticercus suis*, yet long habit on the part of naturalists and the rules of zoological nomenclature alike forbid the change of name. It must be explained, moreover, that the apparently bad grammar of the adjective is due to the fact that, in order to conform to the binomial system, helminthologists are in the habit of leaving out the Latin equivalent of the word "tissue." Strictly the parasite ought to be called *Cysticercus telæ cellulosæ*, or the bladder-worm of the cellular tissue. For my own part, I should prefer to call it *Cysticercus suis*.

The hog measle is readily recognised, not only by its generally larger size than that of the beef measle, but also by the rostellum or proboscis, which is furnished with a double crown of hooks. These organs of anchorage are usually twenty-four in number, but when the same measle occurs in the human body it generally displays (as pointed out by Giacommini) thirty-two hooks, or, in some few instances, thirty-four. As implied (under "Parasite," No. 14) this measle is the sexually immature or scoleciform condition of the *Tænia solium* of man, and fortunately it is not of very frequent occurrence in England; consequently, the pork tapeworm is comparatively rare amongst us.

Illustrations and Specimens—A slice of measly pork is figured in the "Manual" (p. 118), and I have elsewhere represented one taken from the human brain ("Entozoa," pp. 223 and 227). In Plate XII. of my "Introduction," figures are also given from Leuckart and the late Professor W. Smith of Cork, representing the measle in various stages of development. Those by Dr. Lewis (*loc. cit.* No. 25) are especially excellent.

Specimens are preserved in the Hunterian collection in the British Museum, in the Museum of the Royal Veterinary College, and in various pathological collections of the metropolis. It is not improbable that the measles seen in the

heart of a bear (preserved at Guy's Hospital) are examples of this larval entozoon. Be that as it may, one of the original Hunterian specimens shows part of the heart of a hog similarly beset with these scolices ("Catalogue of Entozoa," No. 111). The specimen in the National Museum, from Von Siebold's collection, is from "the brain of man" ("B. M. Catal.," p. 98). In my cabinet I have also several specimens from the human brain; instances of this remarkable choice of residence on the part of the parasite not being so rare as is commonly supposed.

27. The Mutton Measle (*Cysticercus ovis*).—In the year 1865 I detected the presence of Cysticerci in mutton, since which time I have not only repeatedly seen these cestode larvæ in the flesh of sheep. but others have confirmed the truth of my original determination. It has thus been placed beyond a doubt that all the ordinary meats sold in the market are liable to become measled. At one time it was thought that the flesh of swine alone was liable to infection, but now we may encounter also measly beef, veal, and mutton.

At a meeting of the Pathological Society of London, held on the 3rd of April, 1866, I mentioned that on three separate occasions I had noticed measles in joints of mutton sent to my own table. These were all, I believe, from the shoulder, but quite recently (Sept. 27, 1874,) I removed some from a leg-joint whilst at dinner. All the above-mentioned specimens were in a more or less advanced condition of calcareous degeneration, yet, if no other data had been forthcoming, the case was clearly proved. My friend, Dr. Kirk, H.M. Consul at Zanzibar, mentioned to me that he had frequently seen similar appearances. In the year 1866, Mr. Heisch, Professor of Chemistry, obtained a perfect Cysticercus from the interior of a mutton chop. This he was good enough to place at my disposal for the purpose of scientific description.

The mutton measle is somewhat smaller than the pork measle, being armed with a double crown of twenty-six large and well-developed hooks. The larger hooks measure 1-160th of an inch in length, the suckers having a breadth of about 1-100th of an inch.

As I had only examined one tolerably perfect specimen of the mutton measle (the caudal vesicle in Mr. Heisch's example being injured), I was very glad to see it stated in *Nature* that Dr. Maddox had also found an encysted bladder-worm in the neck of a sheep. This was reported in that journal for May 15, 1873 (p. 59). In that communication the

author stated that "the presence of immature ova was particularly noted."

As the notion of the existence of eggs in larval cestodes was altogether at variance with what we know of the phenomena of tapeworm life, I ventured shortly afterwards (in the pages of the *London Medical Record* for Aug. 6, 1873) to suggest that the author must have mistaken the egg-shaped calcareous corpuscles (which I had noticed so abundantly in my own specimens) for the ova in question. I should mention that Dr. Maddox's paper was subsequently published at greater length in the *Monthly Micr. Journal* for June, 1873 (p. 246), in which the views to which I have referred were reiterated with confidence. In the interests of truth I felt bound to characterise certain of the conclusions arrived at by Dr. Maddox as simply "incredible," but being most anxious to do justice to the confirmation of previous discovery, I also stated what is perfectly true, that the memoir in question "formed an important contribution to our knowledge of the structure of the mutton measle." I had no idea that in pointing to mere "errors of interpretation" I should grievously offend the excellent author of so valuable a communication. However, very shortly afterwards a long letter appeared in the *Med. Record*, in which the author showed that he was much vexed that I should have "impugned" the "accuracy of his conclusions." He defends his position, and, if I understand his meaning correctly, Dr. Macdonald, F.R.S., is represented as supporting his views. Dr. Maddox says: "We were quite alive to the anomalous position. Hence the exceptionability of the case rests on more than my own evidence." Here I will only add that there are few observers in whose opinion I should naturally place more confidence than in those of the distinguished Assistant-Professor of Naval Hygiene at the Victoria Hospital, Netley. I have little doubt that these eminent observers will eventually yield the point in question; but whether they do so or not, the value of Dr. Maddox's contribution as a record of the facts observed is quite independent of the question as to whether a bladder-worm or sexually immature cestode is capable of generating or containing the genuine eggs of a tapeworm.

Specimens and Illustrations.—I have given a figure of the head of this parasite in the *Supplement* to my "Introduction;" but, for minute details, the excellent plate accompanying Dr. Maddox's paper should be consulted. The only specimens known to exist are contained in the collections of the various authors above mentioned.

Special Note.—An interesting problem remains to be solved in connection with the mutton measle. Whence does it come? In reply, I can only express the conviction that, as obtains in the case of the beef and pork measle, man himself will turn out to be the sole bearer of the adult tapeworm-representative. In the absence of experimental proof I have, indeed, already obtained a certain kind of evidence, which, though by no means conclusive, seems to substantiate this view. As mentioned previously ("Parasite," No. 16), I am in possession of numerous small proglottides of a tapeworm from the human subject, which are, in my opinion, referable neither to the beef tapeworm nor to the pork tapeworm. I have, therefore, called the species provisionally *Tænia tenella*. As the joints of this worm bear a closer relation to those of the pork tapeworm than they do to that derived from beef, and as the former is armed, whilst the latter is destitute of hooks, and as, moreover, all the human tapeworms are, thus far, believed to have originated from Cysticerci in the flesh of vertebrated intermediary bearers, it thus becomes a matter of high probability that the mutton measle is the scoleciform stage of growth of my *Tænia tenella*. Should a fresh example of this comparatively small and slender human tapeworm present itself, I shall endeavour to obtain experimental proof of this supposed relationship by feeding a sheep with the sexually ripe proglottides. The reverse experiment is not one that could well be performed in this country, since few persons, however enthusiastic in the cause of helminthology, would care to swallow the armed cysticerci derived from the uncooked flesh of sheep.

TYPHOID FEVER IN PIGS.

(Second Communication.)

By T. D. Broad, M.R.C.V.S., Bath.

On Monday, Feb. 1st, I was requested by a bacon factor to go to Bradford-on-Avon to examine into the nature of a disease which had broken out in a lot of thirty-two pigs aged about seven months. When I arrived I found that only four were living, and that these were very ill. Twelve had been buried, and sixteen were lying dead. I made a *post-mortem* examination of several, and, finding the usual lesions of typhoid fever, I forwarded some of the viscera to the Royal Veterinary College.

Twenty-four of the pigs had been bred near the town and were bought on Nov. 2nd, and eight others were purchased at Devizes market on Oct. 30th. The first symptoms of the disease were noticed on Jan. 17th, and on the 20th the first pig died. In a few days as many as ten died in one day. They were kept in a field some distance from a road or house.

The way in which the owner accounts for the introduction of the disease is from allowing his man to go to a gentleman's place to bring away one of four fat pigs which was "off his feed." The pig was killed and dressed, and the small intestines—"chitterlings"—were prepared in the usual way. The man subsequently went to his master's pigs, which were about half a mile distant, for the purpose of feeding and attending to them. A week after the fat pig had been killed one of the pigs alluded to died and was buried, and several others were observed to be ill. From this time the disease spread rapidly, with all the serious results I have described.

LEAVES FROM THE CASE BOOK.

By the Same.

Cataract.

I EXAMINED at the request of the Rev. F. Grosvenor, of Dunkerton Rectory, a three-year-old half-bred cart filly about 15 hands 2 inches, which I found had a cataract in the off eye. As the filly matched his other horse, and the seller was willing to take ten pounds off the price, she was kept. Since the time of purchase I have frequently seen her at my forge, and occasionally examined the eye at the owner's request, but never saw any alteration in the cataract; it could be easily seen at a distance of three feet from the eye.

In November last the eye became suddenly inflamed and the surrounding tissues much swollen. As the hair around the orbit was off, it was supposed that the filly had struck the eye against the manger when picking up corn from the floor.

The eye remained more or less inflamed for ten days, and when it became clear there was not the slightest trace of the cataract.

Injured Penis.

April, 1874.—About 8 o'clock p.m. I was asked to go nine miles into the country to see a patient for Mr. Dring, he being from home at the time. The case was that of a fine three-year-old entire cart horse which had been put to

serve a mare about 4 o'clock, but from his being very impetuous and the attendant not being quick enough in rendering assistance, the penis struck the ischium. The organ was bent backwards, and many of the small vessels were ruptured, producing in a short time an immense amount of effusion into the corpus cavernosum, the effects of which were to curve the penis until the glans nearly touched the scrotum. The effusion extended into the surrounding connective tissue, producing an enormous swelling. Warm fomentations had been applied constantly up to the time I arrived, notwithstanding which the parts were becoming cold and the effusion continued to increase. I ordered the fomentations to be discontinued, and had a wide canvas band so applied as to extend round the body and give support to the swollen parts, and at the same time to cause pressure and thus assist absorption. I left orders for the band to be tightened as it became slack.

I saw the horse on the following morning, and found the swelling rather less and the temperature restored. Replaced the canvas band with a strong and wide one furnished with five long straps and buckles, which answered the purpose exceedingly well. I also scarified the parts with a suture needle, in preference to a lancet, as sloughing is more liable to follow the use of the latter instrument in such cases; ordered cold water to be applied after the bleeding from the scarifications had ceased. On the following day Mr. Dring returned home and took charge of the case; he gave an ordinary dose of physic and continued the same course of treatment, under which the swelling became gradually less. He tells me that after he had attended the animal for about a week acute laminitis in both fore feet supervened, but yielded under the adoption of my plan of treatment in the course of a week without leaving any trace of its existence, notwithstanding the attack was so severe that they could not get the special shoes on while the horse was standing, but did it when he was down. The use of the band was continued for some time, but it was six months before the penis recovered its natural shape and action. There is still a little thickening of the tissues at the seat of injury, but the horse appears now to be quite fit to serve mares.

In the treatment of all cases when the animals are likely to be kept standing in one position for several days, I always order the shoes to be taken off as a preventive to laminitis, and should have done so in this case, but in giving it up to Mr. Dring I forgot to name it to him.

I am of opinion that a very large proportion of the cases

of metastasis are the results of the horses standing so long in one position with their shoes on.

Prolapsus Ani.

Jan. 8th, 1875.—A nine-year-old mare donkey, very low in condition, was brought to me suffering from *prolapsus ani*. After returning the gut several times, and finding that it could not be kept in its place, I put on the castrating clams and cut off about six inches of it, searing the bleeding vessels with a *black* hot iron; the part cut off weighed two pounds. After the operation the donkey was put into a loose box and well fed; she lay down for a week without attempting to get up, but fed well, and the bowels acted the same as though there had not been any operation. The animal could not, however, get up without some little assistance for three weeks, but after that time she began to kick up her heels, and was sent away quite cured.

In 1873 I operated in the same way upon a large sow pig, which three weeks previously had been put to a boar. The gut, having been out some days, was much swollen and very black. She farrowed at the proper time, and brought up a large litter of pigs.

Inversion of Uterus.

In December last I had a retriever bitch brought to me with inversion of the uterus. Knowing that it was useless to return it, I took it off as high up as possible with the clams and iron. Bitches appear to suffer very little from the operation.

Mr. C. Parsons, of Launceston, Cornwall, tells me that he has on three or four occasions succeeded in taking off the uterus of a cow in cases of inversion, when he had not been able to return it successfully. He places a ligature of strong tar twine on the neck of the uterus, and applies a second one, if necessary, in the course of three or four days; soon after which it sloughs off.

In all cases where it is possible to use the clams and hot iron I do so, as I find that ligatures cause the animals much more suffering, besides which there is a greater danger of blood-poisoning from absorption of the morbid products during the sloughing process. In all cases of cauterizing it is better to use the iron at a black heat.

I always operate with clams and iron on large indurated mammary glands in bitches. If the skin is involved in the disease, I take it off with the gland; if the skin is not affected, I detach it from the gland and leave the wound open.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 97.)

The DRUPACEÆ—Almondworts—are named from their fruits, which consist of a structure thus defined:

Drupe (adj. drupaceous) a fleshy or succulent fruit, with a bony putamen or lining, as a plum, and has been derived from the classic word drupa, and over-ripe wrinkled olive, Plin.; but this latter must be referred to the spurious drupe of the botanist, any fleshy body enclosing a stone. This beautiful and useful section of plants has been described as follows by Prof. Balfour:—"Drupaceæ (*Drupiferæ*—Amygdaleæ, Almondworts). According to Lindley this is a distinct natural order, while other botanists regard it as a sub-order of *Rosaceæ*. The order belongs to the class of dicotyledons, and the sub-class Calycyfloræ, Polypetelæ, and to Lindley's Royal Alliance.

"Trees and shrubs, with simple alternate, stipulate leaves. Flowers white or pink, in umbels or single; calyx five-toothed, lined with a disc, the fifth lobe superior or next to the axis. Petals five, perigynous. Stamens about twenty, arising from the throat of the calyx. Ovary superior, one-celled; ovules two, suspended. Fruit a drupe, with a hard endocarp; seed usually solitary; no albumen.

"The plants are found in cold and temperate climates of the northern hemisphere. The leaves, flowers, and seeds yield hydrocyanic or prussic acid. The bark is astringent, and yields gum. The fruit is in many cases edible.

"*Amygdalus communis*.—The almond tree, a native of Asia and Barbary, is cultivated in the south of Europe. There are two varieties, one producing sweet, the other bitter almonds. The kernels of the former contain a fixed oil and emulsin, while those of the latter contain also amygdalin, which by combination with emulsin produces prussic acid. *Cerasus communis* gives the common cherry. *C. Laurocerasus*, the cherry laurel or bog laurel, yields hydrocyanated oil. The kernels of species of *Cerasus* impart flavour to noyeau, ratafia, cherry brandy, and maraschino. *Prunus communis* furnishes the common plum, and *P. Armeniaca* the apricot. *Amygdalus persica* supplies the peach, and a variety gives the nectarine. There are five known genera and 110 species."*

* 'The Treasury of Botany,' vol. i, p. 429.

Though the order gives several active principles, it is not much brought into use medicinally. In veterinarian practice, as, indeed, in the human school, the most active medicament, *prussic acid*, is obtained by chemical means from other sources, and it is, perhaps, fortunate for our cattle that the parts of the plants yielding this are usually so bitter that they are not partaken of by them. Thus, laurel leaves, if eaten to any extent, would certainly act as a poison, and we use them in the bruised state for poisoning insects when we collect these creatures.

Dr. Christison speaks of a gentleman who died in consequence of having swallowed a salad made of peach flowers.

Both the fixed and essential oils of almonds are used medicinally, and the fruits are generally esteemed for their mild, laxative, and alterative properties.

But few as may be the medicines derived from the Drupaceæ, their fruits are almost without number, as the Plums, Peaches, Apricots, Nectarines, Cherry, and others (the very mention of which makes one's mouth water), amply testify.

It is curious to note that though the fruits of this family are so luscious and varied, and have, indeed, been varying by the production of new sorts from quite ancient times, yet few of them in a state of nature would be welcome as fruit. Some of the wild cherries are not uninviting, but what are they compared to the May-Dukes and Bigaroons so dear to our memories?

Again, the austere sloe of our hedges is doubtless the parent of many, if not of all the sorts of plum, and yet how little does it possess of the flavour of the Orleans or green-gage plums.

Peaches, nectarines, it is all the same! they are all of them, as we find them in our gardens, derivative examples of the wonderful changes that can be wrought in plants by cultivation.

They are frequently mentioned by the Greek and Latin writers, though it is doubtful whether the sorts they so extolled have many of them come down to our time, but we may with safety affirm that even our own horticulturists have succeeded in greatly improving all the sorts of stone fruits. Both the cherry and the sloe are interesting to the student of antiquity, and are often alluded to in the Christmas carols of the middle ages.

In the West of England there is a legend that Joseph of Arimathea, after travelling so far as Glastonbury, planted his staff near the ruins of the old abbey. This staff is said

to have been of blackthorn, from the wild plum or sloe tree. Well, it grew; but, lo! its blossoms were those of the whitethorn, and of such a peculiar kind that, instead of blooming in May, as does our common whitethorn, and hence its name of May, it flowered about Old Christmas Day, and many of the rustics in Somersetshire keep up Old Christmas as the right Christmas, being thus guided by such a series of miracles.

Anyhow, the whitethorn tree flowering in the winter is a great curiosity, as even while we write our tree, derived from the "Glastonbury Thorn," is full of foliage and flower. At present the miracles wrought by the blackthorn sloe and cherry is the conversion of their leaves into "Pure China Tea," and we are not sure if it be not as good as the China plant itself. At all events, we do not hear so much of the complaint now called "tea indigestion" amongst that class of people to whom the sloe is natural. But while upon the economics of the tribe we had rather mention cherry brandy and Kircheswasser as being due to the cherry, and noyeau and Marischino liqueurs from plum kernels, while the French plums, prunes, &c., from preserved plums, will ever deserve well of all who partake of the lovely dried fruits of this ilk at merry Christmastide.

"ANÆMIA" AMONG THE CATTLE AND SHEEP IN OREGON, U.S., AMERICA.

By A. E. Macgillivray, V.S., Banff, N.B.

I have recently been consulted by a gentleman once well known throughout the length and breadth of Scotland as a breeder of black polled-cattle, namely, Mr. William Watson, late of Keillor, Cupar Angus, in reference to serious losses occurring amongst pure shorthorn and Ayrshire cattle, and various breeds of sheep under his charge, on several extensive farms in Oregon, U.S., America. One of these farms (Reidville) is quite a model one, and is stocked with some of the finest cattle, sheep, and horses, in America. During the last two autumns these animals carried all before them at several of the great national fairs and shows; and, considering this, it must be very annoying to Mr. Watson to see any of them slipping away, as he says in his letter the cattle and sheep are doing.

Mr. Watson's letter is so sensible and so much to the point that I shall here quote it almost word for word. It is dated the 25th December last. He says:—"I am going to ask your opinion on a subject that is causing me much anxiety, namely, a disease among both our herds and flocks, which is costing the State of Oregon thousands of dollars per annum.

"Although not one man in our state is in the least aware what it is, I flatter myself that I know, but, as a comparative stranger, I am not listened to among the old residenters; therefore, I want to be backed by *professional authority*.

"From the description I give you of the *symptoms*, I think you will come to the same conclusion that I have done, namely, that it is *anæmia*, or bloodlessness.

"The herd or flock affected with it are what I call my *grades*.

"The cattle are never housed in winter; they are exposed to the scorching summer sun, and quite six months of cold and wet, lying on the wet ground night and day. Their food is *Timothy grass alone*, never a change, except during snow in winter, when they get *Timothy hay*. The pasture is dried up by the middle of July, and has little substance in it; April, May, and June are the only three months they receive green food.

The cattle, especially the cows giving milk, get very poor and thriftless-looking; they stare in their coats; have a peculiar dulness in the eye; are stiff in their motion, and when urged fast on have invariably a short cough; they are hide bound; and are also uncertain breeders.

"My attention was first drawn to the cattle through a pure shorthorn cow. She was much inclined to run to fat, and, unlike my usage of the others, I kept her purposely on "*Timothy*" to reduce her. She became pregnant, but as she gave no milk I did not take her in and give her artificial food; all I wanted was a fine healthy calf. She calved exactly to her time. When the calf came it was very sickly, requiring help to rise; I wondered what was the matter, but the second day I said to my chief herdsman that I was sure it was a case of anæmia. The calf died on the third day. I had it immediately opened, and found the veins quite free of blood, only a little in the region of the heart!

"My next study was the cow. She was a light roan in colour. After calving she was very weak and hardly able to get up; her skin had a peculiar paleness about it, and so had the white of her eye; her system seemed void of blood.

"Now, if that is not anæmia, what is it?

"Another extraordinary case was that of an imported Ayrshire bull. He was a very bad server when on good keep or in high condition, in consequence of which I put him for about eight months on *Timothy hay*, and when so kept he was very active, *but never got any of the cows in calf*. Well, before our great State show I gave him for about six weeks plenty of cake and meal, so as to freshen him up, and during that time kept him from the cows. Out of seven Ayrshire cows not one proved to be in calf, after being served regularly all through the summer. On his return he was put to them as usual, and to my astonishment he got them all in calf at once. How was this? Did I drain his system of too much blood by keeping him on *Timothy hay alone*, till he became unfruitful? It seems as though I did.

"Last week I lost four of what I call the 'anæmia cows,' calves from quarter-ill. They were still sucking, and getting nothing but the "*Timothy*" they could pick up the same as their mothers, with no shelter. I see in your father's 'Veterinary Manual' that he says quarter-ill is caused by want of fibrine in the blood; surely you can class that as *anæmia?*

"Now, you may think I manage badly, but that is not so. I have as well a managed herd of shorthorns as you will find anywhere, but then I pitch the grub into *them*, and afford them plenty of comfort. As to the *grades*, my employer thinks it will not pay to feed them, and the consequence is they will soon all be ruined.

"I tell the people that it is *anæmia*, and if they would allow me to shelter these poor *grades*, give them a variety of grasses, and say four pounds of good oilcake per day, with perhaps a little oats, that I would soon knock health into them. But they say cattle did without all that before, and they don't see why they should not do it now! Yes, say I, that's true, but the cattle formerly used to roam at large among the woods and forests, where they got both variety of food and shelter, *now they have neither!*

"As to the sheep, the mortality amongst them has been great. The sheep are very much drawn up in their bellies, and droop their heads. On moving them quickly they all cough; they are much emaciated. On *post-mortem* their tissues are bleached-looking and without blood; their liver is much out of sorts, but free from *fluke*. In many cases their lungs are very much inflated; their kidneys pale and covered with slime. A number of them throw their fleeces; they have a very delicate whiteness in their faces and skin.

"My lambs are dropped in March, and weaned about the 20th of July. About a fortnight after they are weaned and put on to the dried "*Timothy*" they begin to drop off very fast and die.

"Another peculiarity among my well-bred long-woolled sheep is, that, although I put the rams among them on the 1st of August, they seldom "take them" before the 1st of October. I never saw this the case either at home (in Scotland), New Zealand, Australia, or California. In any of these countries I could always have new year's lambs, but here I cannot. Surely it must be a want of vigour on the part of the ewes. Before my suspicions were aroused I lost several Cotswold ewes in parturition; they were full of flesh, and yet after death I found them very bloodless. They seemed to have no strength to expel the lamb.

"My few imported Leicesters are my favourites, and I am kind to them. I always keep giving them oats and other *tit bits*, and I have capital luck with them.

"Now, when you can find time, please give me your opinion, and I shall be glad to remunerate you in any way. Meanwhile, believe me yours faithfully," &c.

I consider no apology necessary for having given Mr. Watson's letter at nearly full length, as I am certain it cannot fail to prove interesting, and, besides, I should like some of my professional brethren who may have met with something similar to offer a few remarks on the subject.

From the details given by Mr. Watson as to the routine of feeding, the symptoms, and the *post-mortem* appearances, I do not think that there can be any doubt that he is quite correct in setting down the disease as being *anæmia*, and that both as regards the cattle and the sheep. Any one who will take the trouble of referring to the article on *anæmia* in Professor Williams' recently published work on 'Veterinary Medicine' will find that the description of the disease there given tallies most completely with Mr. Watson's observations; the causes, symptoms, and effects are detailed alike by both parties. Mr. Watson's incidental outbreak of quarter-ill is also referred to by Professor Williams.

The chief causes of the anæmia at present so prevalent in Oregon may be set down as insufficient food and want of shelter, the former being the predominant one. A six or eight months' restriction to dried Timothy grass is quite sufficient to produce the anæmic state in any class of cattle or sheep. In fact, to keep animals in health a variety of food is absolutely indispensable, and more especially so with defective shelter. Knowing this, Mr. Watson sensibly proposes the

true and only remedy, namely, winter shelter and a daily allowance of artificial food of some sort, such as cake or oats. His favourite Leicesters and his high-bred shorthorns, under the best of keep and shelter, show no signs of anæmia; but as soon as he restricts any of them to "*Timothy alone*" (as, for example, the cow mentioned in his letter) then the disease creeps on, thus showing clearly what is the chief cause.

The animals called *grades* are the cattle kept for home use, and not for show or high-price sale. They have little attention paid to them; they get their "*Timothy*" and their water, and are thus quite a hot-bed for anæmia. Summer and winter they lie out; and now that cultivation is spreading they miss the shelter of demolished woods and forests, which a few years back formed a sort of safety valve to them from such diseases as anæmia.

In writing Mr. Watson on the subject I simply stated my opinion that he was quite correct in supposing that it was *anæmia* he had to deal with; and that a variety of food was compulsory; and for affected animals, in addition to this, I advised repeated small doses of iron sulphate.

A couple of years ago Mr. Watson sent me a message as to hoose or husk in calves, and I think he consulted me then, and now again owing to an intimacy having existed between his family at Keillor and my father, the latter having at one time written a good deal on the breeding of cattle.

[It is evident from the remarks made by Mr. Watson that a special cause is in operation to produce the fatality among the cattle and sheep to which he refers. Anæmia, or a comparatively bloodless state of the organism, can only depend, when existing to such an extent as described, upon either a continuous drain on the system or a want of sufficient supply of nutritive matter. There does not appear to be sufficient evidence of the existence of the former of these causes, and, consequently, the mischief must be considered as being due to the latter; but whether it exclusively depends on feeding the animals on "Timothy grass and hay" during the cold season we are unable to determine. In this country the "Meadow cat's tail" or "Timothy grass" is not cultivated in the same manner as in the United States. Here it forms only a percentage of our ordinary pasturage; there it is cultivated to the exclusion of other grasses in the same pasture.

Meadow cat's tail grass is regarded in general as being very nutritive; nevertheless the system of cultivation and manner of dealing with the crop will materially alter its nutritive properties. It is the custom in the States to let it stand

for seed, and in this condition it necessarily contains less nutritive matter and more woody fibre. If thrashed for the purpose of obtaining the seed—the usual plan adopted—and then dried for hay, it is clear that it cannot be of much value as food for cattle and sheep, and consequently other feeding and more nutritive matters should be used with it.

We also think that saline materials should be freely used under these circumstances. The "salt-licks" of which we have heard so much should be at all times within the reach of the animals.—Eds.]

YEW POISONING.

By Frank Earl, M.R.C.V.S., Shifnal.

Perhaps the two following cases of poisoning from eating green yew may interest some of the readers of the *Veterinarian*.

During the last frost I had two valuable yearling colts in a four-acre paddock; they had a warm shed to run in and out of, and as much hay as they liked to pull out of a rack, also a liberal allowance of crushed oats with bran and cut hay. They were seen well on the 30th December, at 5 o'clock at night, when they were fed, and both commenced to eat their corn as usual. Next morning, on going to them, one was found dead. I went to the paddock and found the colt just lying outside the shed on the snow; it had apparently dropped and died without a struggle, for the snow was not in the least displaced. The carcass was much swollen, and when the head was severed from the neck a large quantity of frothy brown coloured fluid escaped from the trachea, and a black fluid blood oozed from the large vessels of the neck; the stomach was much inflamed and moderately full of crushed oats, bran, and cut hay (the evening feed), mixed with a quantity of yew. I could find no trace of yew in the intestines, which were in a perfectly normal state; the left side of the heart was quite empty, and as it were in a state of collapse, the right side full of black fluid blood, the lungs being gorged with the same. I tracked the colts to a yew tree in the paddock, and found they had nibbled the ends of the branches off. The other colt was at once removed, and I administered a powerful purgative and kept the animal on mashes for two days, but I may add that it did not from the first appear to have anything the matter with it. Having heard that the Duke of Bradford had lost some deer, I wrote to Mr. Dawson, his head keeper, who replied as follows:—

WESTON PARK, SHIFNAL;
Jan. 8th, 1875.

MR. EARL.

DEAR SIR,—I received your letter this morning respecting the deer which were poisoned during the late frost. The animals got over the fence into one of the plantations, and ate the ends of the branches and the bark of the yew trees. Three of the deer were found dead close to the tree of which they had eaten. The carcasses were warm and much swollen when we found them. The stomachs were full of yew.

My impression is that the activity of the poison is increased by the frost drying up the sap of the yew.

Pathological Contributions.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of January, 1875, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign Ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.	Slaughtered at place of landing.
Antwerp .	London.	Foot-and-Mouth .	343	...	...	...	343	343
Boulogne.	,,	,,	481	16	...	88	585	585
Bremen .	,,	,,	142	50	...	...	192	192
Bremerhaven. .	Hull .	,,	2	3	...	...	5	5
Hamburg	Hartlepool	,,	15	14	...	...	29	29
,,	Hull .	,,	209	6	...	...	215	215
,,	London	,,	113	...	...	...	113	113
Havre .	,,	,,	34	...	...	...	34	34
Ostend .	,,	,,	60	...	...	...	60	60
Rotterdam	,,	,,	41	2	...	...	43	43
	Total		1440	91	...	88	1619	1619

"ALEXANDER WILLIAMS, *Secretary.*

"Privy Council Office,
"Veterinary Department, 15th February, 1875."

CATTLE PLAGUE.

It is satisfactory to report that the outbreak of cattle plague in East Prussia to which we referred in the last number of the *Veterinarian* has been effectually met by the "stamping-out system," and that the district of Lych is now free from disease.

An inquiry has been instituted for the purpose of ascertaining in what way the disease was introduced, but no satisfactory evidence has been obtained.

Cattle plague is still prevalent in the vicinity of Warsaw, and in the government of Lublin especially.

Reports from Bucharest are to the effect that eighty-eight cattle affectedwith the plague have recently been slaughtered in the district of Belgrade. The disease also exists in Galicia, Dalmatia, and Carinola.

In Hungary proper the plague is reported to be extinct, but it prevails in Croatia and Sclavonia.

PLEURO-PNEUMONIA.

The last report from Switzerland states that pleuro-pneumonia is considered to be at an end.

In this country the disease exists in thirty-four counties.

FOOT-AND-MOUTH DISEASE.

Fresh outbreaks of foot-and-mouth disease are reported from different parts of the country. In Kent a very marked increase in the number of attacks has been observed. Less than a hundred cases of the disease were known to exist in the county in the latter part of last year, while the returns in the early part of January of this year gave nearly three thousand cases among cattle, sheep, and pigs. On the Continent foot-and-mouth disease continues to extend, and during the month of January more than sixteen hundred foreign animals affected with the disease were landed and slaughtered at different English ports.

PARASITES FROM THE HORSE.

On the 9th ult. Dr. Cobbold exhibited to his class a portion of the intestine of a colt, rising two years old, and also some nematode worms from the same. They were sent to the College on the 3rd of February, by Mr. J. A. Clarke, veterinary surgeon, of March, Cambridgeshire.

In a letter addressed to Prof. Simonds Mr. Clarke remarks that the walls of the bowel will be found thickly studded with *Trichonema arcuata,* and in regard to the history of the case he writes to the following effect:

"On Monday, the 1st, I was requested to visit four two-year-old colts. I found all of them in a dreadfully weak and debilitated state, and the one the viscera belonged to was in a dying condition, suffering from acute dysentery. It died the same night; the others were not quite so bad."

In a subsequent communication addressed to Dr. Cobbold, (Feb. 15th) Mr. Clarke supplies the following additional particulars. Speaking of the patients, he says—"They had been out during the summer on wash land—land that is drowned during the winter months. This land bears a good reputation for the first two or three months of summer, after *that* stock always fall off in condition. Last summer, 'keep' being very scarce at home, these young horses were allowed to remain on a very poor pasture on the wash (water also being very scarce) until late in the year; they were then taken up in low condition, placed in a comfortable yard and fed liberally, but they still continued to shrink gradually, but did not show any urgent symptoms until lately, when they refused their food, and became loose in their bowels, and altogether in an anæmic condition. I commenced treating them by giving ʒij of Ol. Tereb. twice a day, with good nursing, &c. I also tried Mr. Rees Lloyd's treatment, but found it of little or no use. It had apparently a good effect the first week; their appetites increased and they were brighter, but they are now gradually getting worse, and I think are too far advanced to recover, even if all the parasites were prevented from doing any further mischief. The digestive system is so far destroyed as to be incapable of sustaining life long. I saw them to-day and am convinced one will not last many more hours."

Mr. Clarke concludes his letter by offering to send some more specimens for examination.

Just as we were going to press Mr. Clarke again writes to Dr. Cobbold to say that the worst of the patients, a colt, did

not die until the 23rd. The *post-mortem* revealed an enormous quantity of various species of parasites, including nearly "half a peck" of lumbricoids. Specimens have been forwarded to the College.

ECHINOCOCCUS VETERINORUM.

A REMARKABLY fine example of hydatids of the liver was also exhibited at Dr. Cobbold's class on the same day.

The specimen of diseased liver, which we believe weighed 47lbs., was sent by Mr. E. Musgrave, veterinary surgeon, Hereford.

"The subject was a sow five years old, which had had several litters of pigs. In November last she was "spayed and put up to fatten." At this time she was in very poor condition, but no indications of ill health were observed by her owner beyond her breathing being somewhat difficult, and that she was frequently grunting as if suffering pain. She took her food readily, but after a time refused to rise to eat. She gained flesh rather fast, and weighed when killed, on February 3rd, 500 lbs., or twenty-five score. All the other organs were healthy."

The hydatids occupied every part of the organ, and belonged to the so-called exogenous type. There could not have been less than 200 of these cysts, varying in size from a pigeon's egg to that of a hen.

Facts and Observations.

TRICHINÆ AND AMERICAN PORK.—We are not aware whether the importation of hams from America into this country is large, but it appears probable, from the number sent over to Germany, that the English market must also receive a share. It ought therefore to be known that their use is not absolutely unattended with risk, and more especially in the case of hams which are cured with the residues of the cane sugar manufacture. Five per cent. of the latter kind, according to Dr. Röper (*German Quarterly Journal of Public Health*), who has carefully examined the subject, are infested with trichina spiralis. Only 3 per cent. of the hams

cured in the ordinary way contain trichinæ. The reason why so many hams are thus diseased is probably due to the circumstance that in the places where the pigs are slaughtered the living pigs are fed with the offal of the dead ones, part of which were affected with trichinæ; the consequence must be a steady increase in the number of infected animals. Röper, after a careful microscopic examination of the trichinæ from American hams, is positive that they are identical with those which have given rise to disease in Germany, the American opinion being that they are of a different and harmless species. He has, however, not been able to convince himself, either by microscopic examination or by feeding animals with the diseased flesh, that the American trichinæ retain their vitality when they reach Europe. An epidemic of trichinosis which occurred at Bremen, in which more than twenty persons suffered after eating American pork, is, however, a sufficient proof that its use is not entirely free from danger.—*Medical Times.*

Testing for Arsenic in Sublimed Sulphur and Washed Flowers of Sulphur. By H. Hager ('Chem. Centr.,' 1874, 376.)—Arsenic is generally tested for, according to the 'Pharmacopœia Germanica,' by boiling the suspected sulphur with ammonia, and then neutralising with hydrochloric acid. This method takes for granted that the arsenic exists in the sulphur as sulphide, or is converted into sulphide by boiling with sulphur and ammonia. Arsenious acid, however, is the usual form in which arsenic occurs in sulphur, and it undergoes no change when boiled with aqueous ammonia and sulphur. Sulphuretted hydrogen must, therefore, be used for its detection.—*Journal of the Chemical Society.*

Function of the Optic Thalami.—Professor Nothnagel, of Freyburg, gives in a recent number of the *Centralblatt* the results of a series of experiments he has performed on rabbits to determine the functions of the optic thalami. They are—1. That these ganglia have nothing whatever to do with the innervation of the voluntary movements. 2. After their extirpation no indications can be obtained of any direct disturbance of the sensibility of the skin. 3. They appear to have immediate relation to the muscular sense.—*Ibid.*

THE VETERINARIAN, MARCH 1, 1875.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

DISEASED MEAT.

A CASE which has lately occurred at Chorley, in Lancashire, re-opens the question to which we have more than once referred, as to the nature of the evidence which is required before the meat of a diseased animal can be condemned as unfit for human food.

The clause in the Nuisance Removal Act which refers to the condemnation of meat unfit for food is not very clear; but it appears to provide only for an examination of the meat, and if the meat appears to the magistrate to be diseased or unsound he may order its destruction. In most instances meat is seized and taken before a magistrate on account of its unwholesome aspect, the meat inspector having no knowledge of the condition of the animal at the time of slaughter; but it is to be presumed that if he possesses any information of the existence of disease in the animal from which the meat was taken he will use it in giving his evidence before the magistrate, who would doubtless decide in accordance with all the facts of the case; but chiefly in practice the decision is based on a mere eye inspection of the meat complained of, without any reference to the condition of the animal of which it formed a part. The case to which we have referred is thus sketched by a surgeon who sent a communication to the *Lancet* on the subject:

"I was called in yesterday by the medical officer of health appointed for this town to give an opinion on a cow which had been slaughtered in the public slaughter-house, and intended for sale at the end of the week.

"The lungs were found covered with almost innumerable tubercles, some of them larger than a common marble. On slicing the lung I found tubercles in its parenchyma, softening and breaking up, and surrounded with purulent matter, forming a large number of abscesses, and others in a quies-

cent state. I agreed with the medical officer of health that the carcass should be condemned on the ground—1st, that it was consumptive and a scrofulous cow; 2ndly, that blood-poisoning might have taken place from the absorption of purulent matter, and would have a tendency to render the meat injurious to man and health.

"Two veterinary surgeons gave evidence that consumption in a cow was totally different from that in the human subject, and however much purulent deposit took place in the lungs, it would not affect the meat for eating. Several butchers gave evidence to a similar effect, and stated it was very common for cows to be sold for consumption to the public in a much more advanced stage than the one under investigation. One veterinary surgeon stated there was never such a thing occurred in a cow as 'milk fever,' and the meat was safe for eating even after such cow had died from parturition. The case was given by the magistrates in favour of the butchers and veterinary surgeons, and against the medical evidence; so the cow has to be sold to the public. The animal was moderately fed, and the flesh appeared well set. The whole agreed that in a few weeks the cow would ultimately have died of the disease."

The cow was undoubtedly the subject of scrofulous deposit in the lungs; some of the masses had undergone the process of softening, a condition, by-the-bye, in which we have never found any pus, but only broken-up tubercle-corpuscles and small particles of calcareous matter; however, there is no doubt of the fact that the cow might be called "consumptive and scrofulous." It is also true that cattle in the last stage of disease are sold for human food notwithstanding that the meat is moist, flabby, and possesses a peculiar sickening odour.

In the case before us the meat is allowed to have been "well set" and the "animal moderately fed," such meat, in short, as would under ordinary circumstances have been sold in the market without any question arising as to its fitness for human food, but as soon as it was known that the animal was in a diseased state there arose an instinctive objection against its use.

Of positive evidence of the unwholesomeness of meat of diseased animals there is none, hence the whole question is in a very unsatisfactory state, and our advice to the members of

our profession is to avoid giving an opinion in reference to a subject on which nothing of a definite character is known. Butchers may have some fair ground for ascertaining the unwholesomeness of meat from animals in certain states of disease, because they to some extent at least know how much of such meat their customers have consumed without suffering seriously in consequence ; but very few scientific men have had any opportunities of judging how far diseased meat is injurious to health, and they can only therefore speak on the broad principle that perfectly healthy animals must furnish the most wholesome food for man, and the greater the departure from health the less desirable the meat must be ; but how much disease is necessary to render meat injurious to those who consume it is a question which has not yet been, and, so far as we can see, is not likely to be, solved.

It would be perfectly right on sanitary grounds to assume that all meat from animals in a febrile state is unwholesome until the contrary be proved ; but in such cases, what would become of our meat supplies, already short enough ? During the prevalence of foot-and-mouth disease and pleuro-pneumonia thousands of diseased animals in good condition are slaughtered and consumed. To prevent this if it were possible would cause something like a meat famine, and yet the open and systematic use of diseased animals for human food is anything but satisfactory.

We can only repeat our suggestion that, in the absence of any reliable evidence as to the effect of diseased meat on the health of man, veterinary surgeons had better leave the question of the fitness of meat for food to the meat inspector, whose duty it is to determine the knotty point.

APPOINTMENT OF PORT INSPECTORS.

We have to announce that there are several vacancies in the offices of inspectors and assistants to inspectors, which are to be filled up as soon as possible. Candidates are requested to send their names to the Principal of the Royal

Veterinary College immediately, in order that an early date may be fixed for their examination. The salaries are from £100 to £200 per annum.

Reviews.

Quid sit pulchrum, quid turpe, quid utile, quid non.—Hor.

Die Kolik der Pferde. Sechs Klinische Vorträge. Von F. Friedberger, Prof. an der Königlichen Central-Thierarzeneischule in München. Berlin, 1874.

Colic of the Horse. Six Clinical Lectures. By F. Friedberger, Professor at the Royal Central Veterinary School in Munich. Berlin, 1874.

Die Kolik der Pferde und das Wurmaneurisma der Eingeweidearterien. Eine Path.-Anat. und Klinische Untersuchung. Von Dr. Otto Böllinger. Munchen, 1870.

Colic of the Horse and the Verminous Aneurism of the Intestinal Arteries. A Pathologico-Anatomical and Clinical Investigation. By Dr. Otto Boellinger. Munich, 1870.

(*Continued from p.* 121.)

Before taking leave of Friedberger's brochure we may notice some interesting observations at the close of his first discourse. Referring to the fatality of Colic resulting from worm-aneurism, he remarks upon the comparative freedom of military horses in this respect as contrasted with ordinary labouring horses; and he shows that this arises from the fact that the latter are not cared for to the same extent, or rather, they are not properly managed dietetically. Not that the occurrence of verminous aneurism is less frequent in military horses than in others, but that the conditions are such as necessarily account for their suffering to a much less degree. The circumstance that the military horses are, as a rule, younger is another factor in their favour.

But we cannot dwell further upon the various interesting points discussed by Professor Friedberger without doing some injustice to the valuable essay by Böllinger, whence much of Friedberger's information is derived, and honourably acknowledged to be so.

To those members of the veterinary art in this country who

think that pathological researches should be left to the medical profession, we commend the elaborate memoir now before us. We have neither time nor space to enter upon the subject of worm-aneurism as it deserves; yet, at the risk of incorrectly rendering one or two of the technical expressions employed by Böllinger, we will endeavour to give a tolerably literal translation of the *résumé* which occupies the final pages of his work (s. 257 et seq,). The results are stated *seriatim* as follows:—

1.—The worm-aneurism of the visceral arteries of the horse, existing in 90 to 94 per cent. of fully adult horses, has a general correspondence with the *aneurisma verum mixtum* of man. It is, however, essentially distinguishable from the same by its seat, cause, character of its walls, contents and mode of termination. The worm-aneurism arises from the parasitism of the palisade worm (*Strongylus armatus*), owing to an inflammatory affection of the arterial wall which it causes, and which one may describe as a recurrent traumatic endo-arteritis. This holds good for all the visceral arteries with the exception of the abdominal aorta, in which an aneurism may arise from local increase of pressure.

2.—The formation and further development of the aneurism is further favoured by the narrowing of the arterial calibre which is caused by the inflammatory swelling of its walls and also by the contemporaneous formation of a thrombus (clot); this latter still further supporting and exciting the inflammation of the inner coat.

3.—Whilst the causes above mentioned (and of these more particularly the continued presence of the palisade-worms and the plugging of the smaller arteries by thrombi) favour the growth of the worm-aneurism, the small size of the same, notwithstanding the years it has existed, is explained by the considerable hypertrophy of the muscular layer, by the tough fibrous capsule formed in many cases by the connective tissue of the mesentery, and by the adhesion of the intestines to the perpendicular and free lying anterior mesenteric artery; in particular, this last-named circumstance does not allow of any very considerable shortening of the mesenteric artery, which would necessarily be accompanied by considerable dilatation of the arterial tube.

4.—The favourite seat of the worm-aneurism is the trunk of the anterior mesenteric artery, directly at its origin from the abdominal aorta. Most frequently that part of the arterial trunk is dilated from which the arteria ilea, cœcales and colica inferior (*Arteria ileo-cœco-colica*) arise; less frequently the arteria colica superior at its origin and the arteries of the

cæcum and colon in their course in the mesocœcum and mesocolon. The verminous aneurism also occurs in the cœliac artery (Bauchschlagader), in the posterior mesenteric artery (Gekrösarterie) in the renal arteries, and in the abdominal aorta. A horse is not unfrequently afflicted with several aneurisms of this kind at one and the same time. Thus in one case (described and figured by the author at page 37 of his memoir) there were six of these aneurisms affecting the abdominal aorta and its branches in the same horse. The verminous aneurism may occur from the sixth month of life onwards; and, with increasing age, the number of horses free from such aneurisms becomes continually smaller.

5.—The size of the aneurism varies between that of a pea and that of a man's head. The dilatation is, as a rule, equal on all sides; the form being usually thumb-shaped or bottle-shaped, passing into that of a cone or long oval figure. This general configuration is principally due to the free and moveable situation of the anterior mesenteric artery.

6.—In contrast to aneurisms of the human subject, the walls of the worm-aneurism of the horse are almost without exception indurated. In addition to the mesenteric connective tissue, all the arterial coats and especially the *tunica media* generally take part in this induration. The hypertrophy of the media, which stands unique in respect of what is known of arterial disease, forms a compensatory action of the arterial wall, analogous to the muscular hypertrophy of the heart in valvular disease. This change in the media points to the fact that in the development of aneurism of man the early disturbance of the nutritive process in the tunica media is not a less essential factor than the degeneration of the *tunica intima*.

The changes in the *intima* are the least constant. They present all stages of progressive and retrogressive metamorphosis, from simple induration to ulceration and calcification. In the walls of the verminous aneurism one not unfrequently finds all the pathological changes exhibited by atheroma in man. Calcification is a common form of the retrograde process and, in very rare cases, may pass on to the formation of true bone. T. S. C.

(To be continued.)

Extracts from British and Foreign Journals.

THE TRANSMISSIBILITY OF TUBERCULOSIS.

By George Fleming, M.R.C.V.S., Royal Engineers.

(*Continued from* p. 55.)

It was decided that Nos. 2 and 3 should be at once killed, No. 1 being kept in order to study the alterations at a more advanced period of infection. This calf was also apparently a little better, scarcely coughed, and, had it not been for the progressive emaciation, a real improvement might have been said to have taken place.

No. 3 was first bled to death. The autopsy, made immediately, revealed the most perfect lesions of generalised tuberculosis, the mesentery and intestines being extremely involved. The mesenteric glands were so infiltrated that several had acquired the volume of a man's fist. Their entire mass weighed 1650 grammes. It was a magnificent example of "carreau," or mesenteric phthisis. With regard to the intestinal eruption, this was manifested from the commencement of the duodenum to near the termination of the colon, but its confluence was particularly remarkable in the ileum. The tubercles were nearly all in a state of ulceration, and they were almost as numerous on the other parts as on Peyer's glands. The true stomach had also some tubercles; but none were observed in the other compartments of the viscus, though three fourths of the glands lying beside the vessels of these were tuberculous. Neither liver, spleen, nor kidneys, were affected. The lesions in the thorax, though less marked than those in the abdomen, were yet fully as remarkable. All the bronchial glands, as well as those of the mediastinum, were diseased, and had attained a considerable volume. The lungs were studded with crude tubercles, in number about forty, whose volume varied between that of a pea and a filbert. There were also a certain number of greyish, semi-transparent, but isolated granulations projecting beyond the surface of the pleura. Nothing unusual was observed in the bronchia or the greater part of the trachea; but at the commencement of the latter, as well as in the subglottidean portion of the larynx, on the posterior part of the windpipe, there were granular patches speckled with small ulcers, some of which were bleeding. Two similar patches existed on the inner face of the arytenoid cartilages. Between the pharynx and the vertebral column were two glandular masses, whose development was such that they must have certainly im-

peded deglutition. All the other cervical glands were infiltrated with yellow tuberculous matter; the submaxillary glands were likewise involved, those on the left side being greatly enlarged. The cranial organs were unaffected.

These were the results of this most interesting and startling autopsy; and to fully appreciate their value regard must be had to the age of the animal, for we must not forget the predominance of glandular over the other forms of tuberculosis in what we may term "infancy."

The autopsy of calf No. 2 was not less interesting; though its results were so like those of No. 3, that Chauveau only enumerates some peculiarities. The principal of these was the complete absence of laryngeal phthisis, though the cervical glands were as seriously affected as in the other animal; and though the granulations and masses of tubercle in the lungs were as well defined, yet they were not so numerous. The mesenteric tuberculisation was quite as advanced, and the tumours as voluminous; but the intestinal eruption was, on the contrary, quite discrete, and was only remarkable in the ileum. There were a few grey, semi-transparent granulations in the spleen.

In the presence of these important facts, asks Chauveau, is it possible any longer to doubt the virulence of tuberculosis? and he replies in the negative. "It now appears proved that the identity of tuberculosis with the other virulent diseases is so complete and so absolute, that we must either recognise its virulency, or deny the existence of virulence altogether. There is no middle place in this dilemma."

To prove that there was no analogy between this induced disease and purulent affection, and to dispel any doubts which might exist in this respect, Chauveau asserts that he had a multitude of facts to prove that ordinary pus may be introduced into the digestive canal, even in considerable quantity, with impunity.

Chauveau is certainly the first to point out the important consequences resulting from these experiments, with regard to the manner in which tuberculosis may be propagated, and their indications in respect to private and public hygiene. If, he says, tuberculosis is acquired through the digestive organs, it is evident that its natural and spontaneous contagion cannot be exclusively attributed to infection of the atmosphere by the air expired from the lungs of phthisical animals. Creatures confined in the same stable or pasture, and drinking from the same ponds or troughs, are constantly liable to swallow the mucosities that are discharged from the nostrils of their comrades; and if these secretions are derived from phthisical animals, they may become the cause of tuberculous infection. This is equally true for the human species,

and it would be superfluous to demonstrate how the intimacy which exists between the members of a family, especially between husband and wife, necessarily exposes them to all the chances of tuberculous infection by the digestive organs. Indeed, so convinced was Chauveau of this, that he proposes to show that this mode of infection may be incomparably more frequent than contagion by the respiratory passages. Meanwhile, it is sufficient that infection by the digestive organs is demonstrated to be possible, in order to impose, in the prophylaxy of tuberculosis, very simple hygienic precautions, which may avert the chances of accidental transmission of the tubercle virus by this channel.

But what is of still more importance, perhaps, is the relation of bovine tuberculosis to public hygiene, and Chauveau appears to have been the first to indicate this source of danger. He states that the flesh of phthisical animals enters somewhat largely into the public alimentation, no legal enactments explicitly proscribing its sale; and cattle in every stage of tuberculosis are killed in the slaughter-houses, those most diseased finding their way to the butchers' stalls in poor localities. He, therefore, is quite justified in inquiring what part the consumption of such food may play in the propagation of phthisis in the human species, especially when it is remembered that bovine tuberculosis is identical with that of man. And Chauveau's more recent experiments have proved that cattle can be infected by the ingestion of human tubercle. But this authority did not regard the flesh as being virulent in itself, except when it contained tuberculous matter in the shape of infiltrated lymphatic glands, &c., though the blood retained in the flesh might also be a vehicle for the tubercular elements. He also notes that the tuberculised viscera are not rejected as food when they are not much affected. Cooking, it is true, may completely destroy the virulent property of the flesh; and this is most fortunate, for otherwise its utilisation might entail the most lamentable and wide-spread consequences. Safety can only be attained, however, by thorough cooking, so as to completely destroy the virulent activity of such flesh.

Chauveau, finally, insists on the necessity for studying this grave question in sanitary policy, and concludes his important communication with the following *résumé* of his experiments:— 1. They prove that bovine animals contract tuberculosis by digestive ingestion, as they may take anthrax and vaccinia, as sheep take variola, as solipeds take glanders, as man takes smallpox, &c. 2. They place beyond doubt the fact as to the virulence and contagious property of tuberculosis, and show that the labours of Villemin have not been recognised as they deserved. 3. That the digestive canal constitutes, in the bovine species, as in man, a

channel of contagion readily disposed for the propagation of tuberculosis, and which may be more frequently the mode of access than through the pulmonary organs.

Subsequent experiments, by the same excellent authority, have still further supported the conclusions he had arrived at in his earlier researches, and these must be held as convincing to any but the most sceptical. Now and again some experimenters, who have not been so successful as Villemin and Chauveau, have controverted the results he has established, and others have denied that these results have any value in the direction indicated by him. But, fortunately, in one respect, Chauveau soon had numerous proofs of the justness of his conclusions. Harms and Gunther, of the Hanover Veterinary School, produced tuberculosis in rabbits by feeding them with the flesh and lungs of a tuberculous pig and a phthisical cow. They did not find the young of these rabbits infected, though they had been suckled and kept alive for ten weeks.

Leisering, of the Dresden Veterinary School, fed a sheep for three days on the tuberculous lymphatic glands of a cow. After the fifteenth day, the thermometer indicated an increase in the temperature of the animal of 1° to 1·5°. On the sixth week there was cough and emaciation, and towards the tenth week the respiration was hurried; while auscultation and percussion revealed infiltration of the right lung, which had become impermeable to the air. The sheep was killed on the eighty-fifth day, and on an examination of the carcase being made, the intestinal mucous membrane was found ulcerated and studded in different places with small tuberculous tumours; the mesenteric glands were tuberculous; the liver and lungs were full of tubercles, and in the latter the largest masses were already calcified. The tumefied bronchial glands likewise exhibited traces of cretification. Another sheep, which had only received twenty grammes of tuberculous matter, also became affected, as did a number of rabbits fed on the same material.

Gerlach, of the Berlin Veterinary School, thus describes the results of his experiments:—1. The tuberculosis of cattle is very infectious. 2. The tubercles covering the serous membranes, as well as those in the other organs, are as infective, and produce the same tubercles, as the tuberculous matter of the lungs. The identity of pulmonary phthisis of cattle and general tuberculosis cannot be doubted. 3. Infection can be produced after inoculation, as well as after ingestion of the tuberculous matter. 4. The flesh of animals affected with tuberculosis possesses, in certain conditions, the power of infecting, though to a less degree than the tuberculous matter. 5. The temperature of boiling water destroys the infective principle; though boiled tubercles,

nevertheless, often preserve a certain degree of virulence. It is in this as in trichinosis. Although the temperature of boiling water, or even a lower temperature, destroys the parasites, yet there may be found in the centre of the boiled flesh living trichinæ: muscle being, in general, a bad conductor of heat, and the high temperature only reaching its interior after some time has elapsed. In some experiments it will be found that tubercles an inch in diameter will, after half an hour's boiling, still possess infective properties; though these are, of course, diminished. Gerlach's experiments have been, and are now being, carried on with all kinds of animals, and particularly with cooked and uncooked flesh and uncooked milk. He asserts that the infective properties of this fluid can no longer be doubted or denied.

Zürn, of the Jena Veterinary School, has fed pigs, first with the milk, and then with the flesh of a phthisical cow, and produced various degrees of tuberculosis in them.

Böllinger, of the Zurich Veterinary School, has made nineteen experiments, the results of which led him to the following conclusions:

1. Tuberculous matter obtained from man, and inoculated in the dog, produces a typical miliary tuberculosis of the pleura, lungs, liver, and spleen. Inoculations on carnivorous animals in general are negative, or only produce an insignificant local reaction.

2. The inoculation and ingestion of tuberculous matter from the ox, produces, in herbivorous animals (goats), tuberculous infection in two forms—miliary tuberculisation of the peritoneum, and caseous deposits in the intestinal mucous membrane, as well as in the mesenteric glands.

3. The contents of the bronchia of the tuberculous lungs of an ox produce the same effects as the caseous matter of the lungs, when inoculated or ingested.

4. The ingestion of fresh tuberculous matter from the ox has no effect on carnivorous animals; with herbivorous creatures, on the contrary, it produces intense tuberculous infection, characterised by caseous lesions of the intestinal mucous membrane and mesenteric glands, hypertrophy of Peyer's patches, and the eruption of miliary tubercles in the peritoneum, liver, and lungs.

5. The tubercle virus is active in small doses; twenty to twenty-five grammes of tuberculous matter from the lungs may kill such creatures as the goat, in two months.

6. The ingestion of pus alone from the caseous lesions does not produce tuberculosis in the goat.

7. Certain forms of tuberculosis induced by the ingestion of tuberculous matter present, in an anatomical and pathological point of view, a great analogy to human scrofula, and,

like it, are manifested by caseous degeneration of the cervical and mesenteric glands.

8. There is no incompatibility between anthrax and tubercular infection.

The experiments of Villemin, Chauveau, Klebs, Gerlach, Bagge, Semner, Gunther and Harms, Zürn, Biffi and Vergad, and some personal experiments previously made, are quoted by Böllinger, who arranges them under four heads or sections, as follows:

1. Ingestion of tuberculous matter obtained from man. In two pigs and two rabbits, a negative result. In one pig, enlargement of Peyer's patches and mesenteric glands, and caseous degeneration of portions of these.

2. Ingestion of tuberculous matter from the ox: fresh glands, caseous matter, the contents of the bronchia. Animals experimented with: five sheep, two goats, four pigs, eight dogs, a large number of cats, twenty rabbits, one porpoise, eight pigeons. A negative result with the dogs and cats; nearly always a positive result with the pigs, sheep, and goats. Most frequently, with these animals, there was caseous degeneration of the intestinal mucous membrane, mesenteric glands, sometimes the cervical glands, and the lungs. In three sheep there was veritable "tabes mesenterica." With the rabbits, the ingestion of raw tuberculous matter produced results sometimes positive, sometimes negative. In one instance, the ingestion of boiled tuberculous lymphatic glands developed general tuberculosis; but, on the other hand, boiled tubercles had no injurious effect on five rabbits. And a pig fed with the same material only exhibited, after death, tumefaction of the mesenteric glands. Cooked or uncooked tubercles given to other rabbits infected them; and the ingestion of tubercles from an ox infected a porpoise, but had no influence upon two pigeons. The ingestion of caseous pus alone had no effect on a sheep.

3. Ingestion of the flesh from phthisical oxen, or those artificially infected. Positive result in three pigs; general tuberculosis or alterations in the lymphatic glands. In one pig leucæmia, scrofula, and tuberculosis. Result always negative with rabbits when fed with raw or cooked flesh.

4. Ingestion of the milk of a tuberculous cow. Three pigs, three calves, one sheep, two goats, two cats, and fourteen rabbits. In the three pigs miliary tuberculosis, and lesions analogous to those of scrofula; in the two cats, a negative result. A positive result in two rabbits; a negative result in fourteen rabbits fed with the boiled milk.

Böllinger thinks it possible, or rather probable, that intestinal tuberculosis, consecutive to pulmonary phthisis, may be produced by the sputa being swallowed and passing into the intestine. He

also thinks it proved that scrofula and tuberculosis are only two forms of the same disease at different periods of development.

Klebs has been successful in producing tuberculosis by giving animals milk from those which were diseased, and his experiments, therefore, have an extremely important bearing. In addition to rabbits and guinea-pigs — creatures which appear to be very susceptible to the artificial production of the malady—he accidentally induced the disease in a dog by feeding it with the milk of a cow in the last stage of phthisis. The results of his experiments led him to the conclusion that the use of this milk always produces tuberculosis, which commences as an intestinal catarrh, and then assumes the form of tubercles in the mesenteric glands; it afterwards affects the liver and spleen, and subsequently the thoracic organs. He asserts that the tubercle virus is present in the milk of phthisical cows, whether they are slightly or gravely affected; and that it chiefly exists in the serous portion, as when the milk has been so filtered as to deprive it of its solid particles, the fluid portion appeared to be as active as when the malady had reached an advanced stage in the animal from which it had been procured.

He admits that it may produce no injurious effects on vigorous subjects, and he has even observed fully developed tubercles to be absorbed and disappear after a time. He thinks it probable that the virus of tuberculosis may exist in varying proportion in the milk of phthisical cows, according to the extent of the disease in them; and he is further of opinion that the malady may be developed in children born without any tendency to it, through the medium of the milk of the mother or nurse.

Since Kleb's researches were published, Viseur, an able veterinary surgeon at Arras, France, has been successful in producing tuberculosis in cats, by feeding them with tuberculous matter. One of these animals was found to have all the lymphatic glands enormously hypertrophied; the mesenteric glands greatly increased in size; and the lungs studded with white hard tubercles —some of them as large as a grain of barley. These cats ate the tuberculous matter voluntarily.

Saint-Cyr, of the Lyons Veterinary School, has likewise proved the transmissibility of the disease by the stomach.

The vital tenacity of the tubercle virus appears to be somewhat remarkable. Inoculation experiments have demonstrated that it preserves its potency through three or four removes or generations; and successful inoculations have been made with tuberculous matter from a patient who had been dead for thirty-six hours, and with sputa which had been in a dried condition for twenty days. If thoroughly boiled, its vitality is destroyed; and Klebs found that the action of alcohol deprived it of its

potency. Villemin is of opinion that the transmission of the malady in the human species takes place most frequently by means of the dried expectorated tuberculous matter being accidentally reduced to powder, and carried by the air into the lungs. Veterinary surgeons have for many years believed that forage soiled by the expectorations of the diseased, and consumed by healthy animals, will communicate the malady.

We have yet a good deal to learn with regard to the pathology and communicability of this disease; but there can be no hesitation in recognising the importance of the results already achieved. The commencement of phthisis is generally so insidious in the human species, that it is most difficult to arrive with any degree of certainty at the causes which directly induce or favour its development; but, from the evidence before us, it is to be feared that at least one of its sources must be referred to the utilisation of the carcase, but more especially of the milk, of phthisical cattle as food. It is certain that tuberculosis is a common and a very destructive disease, among dairy cattle especially, and more particularly those in towns; that the udder of these animals is one of the glands not unfrequently involved; that infants and adults consume milk in somewhat large quantities—indeed, it is the principal article of diet of young children; and that phthisis is a very prevalent and fatal malady in the human species, and chiefly among the dwellers in towns and cities.

From what has been already ascertained, there is every reason to view with grave suspicion the use of the flesh of phthisical cattle as food, especially if the disease is much advanced and the tissues generally involved. But with more reason the milk from cows affected with tuberculosis should be prohibited, more particularly for the use of infants, who mainly rely upon milk for their sustenance, and whose powers of absorption are very active. Even if such milk did not possess such dangerous infective properties, its deficiency in nitrogenous elements, fat, and sugar, and the increased proportion of earthy salts, would alone render it objectionable as an article of diet. It has long been known that it was liable to produce diarrhœa and debility in infants; but though many children fed on such milk have died from general or localised tuberculosis, the part probably played by this fluid in its production has not been suspected.

PERNICIOUS ANÆMIA: A NEW DISEASE.

The advance of knowledge is ever bringing to light new diseases, or rather is disentangling and isolating groups of symptoms formerly confused under one comprehensive title, and showing how they really depend on different causes and on different pathological conditions. "Bright's Disease" and "Addison's Disease" are terms which remind us how symptoms uncomprehended for centuries may be suddenly elucidated by the grasp of minds gifted in co-ordinating facts. The acuteness of a Swiss observer seems to have added another to the list (already no short one) of diseases with which the present century has enriched our text-books. Under the name of "Progressive Pernicious Anæmia," Dr. Biermer, of Zurich, has described an affection which differs from ordinary simple anæmia in a marked manner, and which, in fact, appears to be a disease *sui generis* in the sense employed above. In five years he has met with fifteen cases of it in patients varying from eighteen to fifty-two years of age, the majority being women. It frequently followed chronic diarrhœa, and child-bearing seemed especially to predispose to it. Those affected became extremely pale, and the skin of their hands, feet, and face acquired a swollen look. They became weak, had fits of giddiness and palpitation of the heart. The appetite failed, and there was a feeling of pressure in the epigastrium. Transient diarrhœa often occurred, and there were attacks of feverishness without the fever assuming any particular type. Anæmic murmurs were sometimes present of such intensity that organic disease of the heart was suspected, but none was ever found after death. With all these symptoms of failing health it is a very remarkable fact that no actual diminution of the fat covering the body could be made out. As the disease progressed ecchymosis appeared in the retina, even though vision remained intact. Sometimes there were small petechiæ under the skin, and less frequently hæmorrhage took place from the nose and kidneys. Transient paralyses were probably due to small hæmorrhages into the brain-substance. Towards the end of life dropsy sometimes set in, and delirium also occurred. The course of the disease was always chronic, and the termination always fatal. The necropsy invariably showed a partial fatty degeneration of the papillary muscles of the heart, and fatty degeneration of the small blood-vessels of various organs. No treatment has as yet been of any avail. Biermer's observations have been corroborated by Professor

Immermann, of Basle, who has lately met with two cases exactly resembling those described by the former. Immermann, in his remarks on these cases, especially insists on the diagnostic points which mark off pernicious anæmia from other diseases in which poverty of blood is a prominent feature. Thus, it differs from ordinary chlorosis in its steady and uninterrupted development, and from marasmus of other kinds in the retention of the fat which covers the body. Pernicious anæmia has a great superficial resemblance to albuminuria, but in the former the urine either contains no albumen at all or only a mere trace. The absence of enlargement of the spleen and lymphatic glands separates it from leucocythæmia, and the absence of pigmentation of the skin distinguishes it from Addison's disease. The only cases known when Immermann published his paper in the early part of the present year occurred in the neighbourhood of Basle and Zurich. He therefore believes that there must be some local cause for this very rare affection, since its symptoms are so remarkable that it would otherwise have probably been observed elsewhere. However, Professor Zenker has already given an account of the *post-mortem* examination of a woman who died in the Dresden Hospital after suffering from extreme anæmia and repeated hæmorrhages from the uterus. Her body presented all the pathological appearances of "pernicious anæmia." She had hæmorrhages into the brain, ecchymoses on the visceral surface of the pericardium, general anæmia of all organs, and fatty degeneration of the heart-muscles and of the aorta. A similar case, without autopsy, has been recorded by Dr. Gfrörer, of Heilbronn, so that, after all, the disease may turn out to be one which, like many others, only requires to be carefully searched for to be found. We are not aware that any case has as yet been reported in Great Britain; but no doubt there will soon be many observers on the look-out for it, and new light will be thrown on its etiology and course. For the sake of poor human nature we must, however, hope that so serious a malady may only be due, as Immermann supposes, to special local influences, and that its distribution has not a wide range. Unless improvement in the treatment of disease goes hand-in-hand with the discrimination of its various forms, science alone, and not the sufferer, will be benefited thereby.—*Medical Times and Gazette.*

WHAT IS A BACTERIUM?*

By W. A. Hollis, M.D.

This question is thus answered by Ehrenberg in his great work on Infusoria:† "Animal e familia Vibrioniorum divisione spontanea in catenam filiformem rigidulam abiens." Dujardin accepted this definition without alteration, although he modified somewhat the other genera of the family. The derivation of the word itself (from *βακτηριον*, a little rod) corresponds well with the characteristic features of the organism above given. For several years the accuracy of Ehrenberg's definition was unquestioned; eventually, however, from the observation of the behaviour of these organisms with certain chemical reagents, and mainly also from the elaborate researches of Professor Cohn regarding their morphology, their animal nature was disputed. It was found that they were unaffected by boiling with potash water, and they were further said to behave somewhat as cellulose does when they were treated with sulphuric acid and iodine, although from their extreme minuteness any changes which take place in their tissue under such conditions are very difficult to observe.

For many years past Professor Cohn, of Breslau, has published in occasional papers the results of his investigations on the subject. He has made one great step in advance of previous observers in ascertaining so much of the history of the bacterium as that it arises from the gelatinous scum seen floating on the top of water containing putrescent organic matter, and this he named "zoogloœa." He then described the *Bacterium termo* in these words:‡ "Cellulæ minimæ bacilliformes, hyalinæ gelatina hyalina in massas mucosas globosas, uvæformes, mox membranaceas consociatæ, dein singulæ elapsæ, per aquam vacillantes;" and he considered them as of decidedly a vegetable nature, and as allied to the Oscillatoriaceæ. In a more recent pamphlet he placed them amongst the family Phycochromaceæ, in a natural order named Schizosporeæ. His last investigations have led him to divide Bacteria into four groups and six genera as follows§:—

* Abstract of a paper.
† 'Die Infusions-thierchen,' 1838, p. 77.
‡ 'Nova Acta,' xxiv, p. 123.
§ Cohn: 'Beiträge zur Biologie der Pflanzen.' Breslau, 1872.

I. Sphæro-bacteria.	Genus 1.	Micrococcus char. emend.
II. Micro-bacteria.	,, 2.	Bacterium char. emend.
III. Desmo-bacteria.	,, 3.	Bacillus n. g.
	,, 4.	Vibrio char. emend.
IV. Spiro-bacteria.	,, 5.	Spirillum, Ehr.
	,, 6.	Spirochæta, Ehr.

Of these genera the bacterium, vibrio, spirillum, and spirochæta were in the original vibrionia family of Ehrenberg.

Cohn considers the ferment of contagion to be due to the presence of a variety of the sphæro-bacteria, the micrococci of Hallier. The whole group he divides into three: the chromogen, zymogen, and pathogen—the micrococci of pigmentation, of ferment, and contagion respectively. These organisms are exceedingly minute, darkish, or coloured granules, so small as to be immeasurable. They frequently present the appearance of beaded chains, or the form of aggregations (colonies. They are motionless, and are occasionally found with the *Bacterium termo* in putrefying organic liquids. Among the pathogen micrococci I may mention the *M. vaccinæ*, observed by Chauveau and Sanderson in the vaccine lymph; the *M. diphthericus*, which is probably the same organism as that described by Professor Eberth, of Zurich, as attacking first the epithelial elements of a part, and subsequently the deeper tissues, and which led him to say "the metastatic pyæmia is for the most part a diphtheria with numerous localisations;"* and, lastly, the *M. septicus*,† found, according to Cohn, in the miliary eruption of typhus, pyæmia, and other diseases. The chromogen, or pigmentary micrococci, have occasionally been the means of working miracles. Several instances of bread exuding blood, under supernatural circumstances, are related by Rivolta.‡ Ehrenberg found this colour on some bread in the house of a patient who had died of cholera, and he ascertained the pigment to be due to the presence of the *Monas prodigiosa*—small roundish bodies, which Cohn classes with the micrococci.

The true bacteria Cohn divides into two species, the *B. termo*, and *B. lineola*. The *B. termo* are small dumb-bell-shapcd organisms, having a slowly vacillating motion, and about $\frac{1}{9000}''$ or $\frac{1}{12000}''$ in length. I have elsewhere given Cohn's description of these micro-bacteria and their zoogloœa.

* Eburth: 'Zur Kentniss d. Bacteritischen Mykosen.' Leipsig, 1872 p. 15.

† The *Microsporon septicum* of Klebs.

‡ 'Del Parasitti Vegetali.' Turin, 1873.

They are essentially the ferment of putrefaction, and it is doubtful whether putrefactive changes can take place without them. It is probable that Ehrenberg confounded this bacterium with the *Vibrio lineola* in his plates in the work before noticed. The *B. varicosum* of some writers is possibly this species, although, when fresh names are introduced in classification without sufficient description, some doubt will always be cast upon the accuracy of the investigations.

The *B. lineola* is somewhat larger than the preceding species. It is endowed with stronger and more rapid to-and-fro movements. It is rod-shaped, and is essentially the ferment of sour milk. It is equivalent to the *Vibrio lineola* of Ehrenberg, the *V. tremulans* and *B. triloculare* of the same author, and to the *V. lineola* of Dujardin.

The *Desmo-bacteria*, or "linked rods," are distinguished, as their name implies, from the true bacteria by being occasionally united together in chains. They are thus separated: the filament transversely lined—Bacillus; the filament cylindrical and curved—Vibrio.

The *Bacilli Cohn* divides into three species :—

The first, the *B. subtilis*, is the *vibrio subtilis* of Ehrenberg. It is a slender supple thread found in stale boiled milk. Its length is about $\frac{1}{500}''$. It moves with a pausing motion, "like a fish forcing its way through reeds."

The *B. anthracis* of Cohn is the *Bacterium carbuncolare* of some writers. It is described by Rivolta* (following Davaine and Delafond) as an immovable, oblong, highly refractive body, found in the blood of animals affected with the disease. Its size (according to Davaine) varies much, from $\frac{1}{10000}''$ to $\frac{1}{4000}''$ or even $\frac{1}{2000}''$. It is unaffected by water, alcohol, ether, acetic, nitric, or phosphoric acid, or soda, potass, or ammonia. Sulphuric acid readily destroys it. It is occasionally found united in chains of two or three links.

Lastly, the *Bacillus ulna* is distinguished from the *B. subtilis* by the greater thickness of its filament and by its rigidity. Its length is about $\frac{1}{050}''$. Cohn found it in a stale infusion of boiled egg.

The Vibrios are distinguished from all the preceding genera by their rotary motion. This motion, which most writers had restricted to the spiro-bacteria, Cohn, I think, rightly applies to the movements of the vibrio. The *V. rugula* is generally seen with one or two slight curves in the

* Rivolta, op. cit., p. 47.

form of the signs) or S. A flexible thread, $\frac{1}{2500}''$ to $\frac{1}{1200}''$ long; rotation slower than in the following species. This organism was found in the evacuations of cholera and diarrhœa by Leeuwenhoek, and by Davaine in the pus of balanitis also.* The second species, the *V. serpens*, is distinguished by the greater number and regularity of its curves, by the rigidity of the filament, and its more rapid rotation. The thread is also considerably thinner than the *V. rugula*, and its length is about $\frac{1}{2000}''$ The motion is serpentine in appearance.

The Spirilla (including the *Spirochæta plicatilis*, for I do not think Cohn is justified in separating the two genera) of Dujardin† are distinguished by the greater regularity and closeness of the curves of the spiral, and their uniform corkscrew motion. The distinguishing character of the flexibility or rigidity of the threads in the genera Spirochæta and Spirillum respectively, insisted upon by Ehrenberg and followed by Cohn, is rightly set aside by Dujardin as superfluous. All the spirilla, of which Cohn gives three species—*S. tenue*, *S. undula*, and *S. volutans*—were found by him in the decomposing tissues of a fresh-water snail. They are distinguished mostly by their size from each other. The *S. volutans* is by far the largest of all the bacteria, if we apply the name to the genus at all. It is thus described by Ehrenberg, "Filis valde tortuis robustis et elongatis." Cohn fancies that he has found traces of organization within it.

I have above given a short *résumé* of the labours of the most trustworthy naturalists upon the morphology of bacteria. I shall now only add a few remarks upon the limitations we should place on the term.

In the first place, then, it seems right to consider bacteria as strictly forming part of the vegetable kingdom, and this, as I have before remarked, is the opinion of all the most trustworthy authorities of France, Germany, and Italy. I should have included our own country in this geographical list had I not lately been somewhat startled to find a learned professor in a recent lecture at the Royal Institution‡ reported to have represented bacteria to be "animalcules." Secondly, I think the name bacteria ought to be restricted to those minute rod-like hyaline bodies, the *B. termo* and *B. lineola* of Cohn. They have a more or less rapid to-and-

* Davaine, 'Entozaires,' 1860, p. 5.
† 'Infusoires,' p. 209.
‡ See Report in *Illustrated London News*, Feb. 14th, 1874, p. 162.

fro motion. The so-called "locomotive bacteria" of some physiologists are probably in many instances specimens of the larger *V. rugula*. Rivolta considers that the true bacteria have no proper locomotive powers, only the vacillatory movements common to all small particles of matter suspended in liquids. Thirdly, we must, I think, always associate the presence of the true bacteria (especially the *B. termo*) with putrefactive or analogous changes in organic liquids.

At some future period I hope to give a short account of the etiology of these organisms, and the part they play in the causation of disease.

HEMATOZOA OF MAN AND DOGS.

In reference to the recently published researches by Dr. Lewis, already briefly noticed in the previous number of this Journal (p. 115), Dr. Cobbold has addressed a letter to the editor of the *Lancet* (Feb. 6th), which, with the omission of a single paragraph, stands as follows :—

"Permit me to call the attention of your readers, and especially that of foreigners, to some recent additions to our knowledge of the prevalence and probable source of various hæmatozoa infesting mankind and animals. Any attempt to study the parasites of man without taking into consideration the facts connected with the development of similar creatures infesting our domesticated animals can only lead to very partial results. Even John Hunter was aware of this, as the fine specimens in the Royal College of Surgeons' Museum amply testify; and since his time our discoveries in helminthology should suffice, one would think, to enforce this truth on the mind of every pathologist.

"It will be within the recollection of most persons that Sir William Jenner exhibited to the Pathological Society some of the hæmatozoa originally discovered by Dr. Lewis in human blood. These parasites formed the subject of an elaborate *brochure*, eventually issued from the office of the *Indian Annals of Medical Science* last summer. In the pages of the *Lancet*, and elsewhere, that memoir has had ample justice done to it. Dr. Lewis, however, has since followed up his researches with remarkable success, and the result is a second and yet more valuable contribution, entitled 'The Pathological Significance of Nematode Hæmatozoa,' forming (though separately printed for private distribution) an appendix

to the Tenth Annual Report of the Sanitary Commissioner with the Government of India.

"Through the kindness of Dr. Lewis, I have not only received a copy of this memoir, but also some of the new entozoa which he has discovered in the blood of pariah dogs. From careful comparisons instituted, Dr. Lewis makes it appear quite certain that no genetic relation subsists between the microscopic filariæ derived from the human and canine bearers respectively. He gives a series of beautiful illustrations showing that the nematode hæmatozoa of the dog form the progeny of the *Filaria sanguinolenta*, whilst the *Filariæ sanguinis hominis* form the progeny of some other species of round worm. So prevalent is the canine hæmatozoon in India that Dr. Lewis found more than a third of all the dogs he had examined at Calcutta to be affected.

"But the most interesting part of these researches in a pathological point of view is that which relates to the mode of encystation of these parasites in tumours formed in the walls of the aorta and œsophagus of pariah dogs. These formations are the strict counterpart of similar worm tumours formed by the *Spiroptera megastoma* in the horse (of which I have recently received some very choice examples from Mr. Spooner Hart, of Calcutta), whilst the phenomena of growth, moulting, and sexual maturation correspond with what has been only partially ascertained to occur in the still more closely allied *Sclerostoma armata* of the same host. Dr. Lewis adds very greatly to the clearness of his description by giving (in Plate I) a sketch of the thoracic cavity of the dog, showing no less than seven of these tumours *in sitû*, the blood of the particular animal whence the drawing was taken having contained 'innumerable hæmatozoa.' Other figures display the worm in its various stages of growth during its residence within the arterial walls, and in one case the mature worm is shown projecting into the cavity of the aorta.

"In connection with the hæmatozoon (*Filaria immitis*) which was so fully described by Assistant-Professor Welch in the *Lancet* for March, 1873, Dr. Lewis calls attention to the circumstances that this parasite is always found occupying the right side of the heart, and he also refers (quoting my Manual) to the cognate fact that the canine nematode hæmatozoa discovered in dogs by Professor Leiserung were present in the venous blood. Confirmatory of this significant fact, I may mention that only last week I received another specimen of the cruel threadworm (*Filaria immitis*) from Mr. McInnes, of Charleston, South Carolina, U.S., who

states that it was obtained from 'the right ventricle of a bitch's heart.' In like manner nearly all the hæmatozoa of the species described by me as *Filaria hebetata*, obtained by Professor Coughtrey from the heart of a seal, were situated in the right ventricle.

"Another interesting discovery made by Dr. Lewis refers to the presence of nematodes of a totally distinct kind in the walls of the stomach of pariah dogs. He describes them as *Echinorhynchi*, but I am sure he will pardon me for correcting him in one particular, and the more readily so since their marked departure from the nematode type of head and general resemblance to Echinorhynchi would very naturally lead to the conclusion he has formed. They are in truth characteristic specimens of *Cheiracanthus robustus*. As this worm, though present in various species of the genus *Felis*, has never yet, so far as I am aware, been observed in dogs, Dr. Lewis thus incidentally contributes another highly interesting datum, which has a special and independent value of its own.

"It is only fair to mention that Dr. Prospero Sonsino, of Cairo ('Ricerche intorno alla Bilharzia in relatione colla ematuria dell' Egitto,' &c.) has also found nematodes in the human blood, and since they were associated (as in my own case) with the presence of the *Bilharzia hæmatobia*, there can be little doubt but that they refer to the same parasite as that discovered by Lewis. In short, the human nematode worms from the blood and urine found by Salisbury, Sonsino, and myself, are without doubt all referable to the so-called *Filaria sanguinis hominis*.

"In conclusion, I will only add the expression of my belief that the time cannot now be far distant when these helminthological discoveries will receive that attention from the profession as well as from sanitarians which their importance in relation to the welfare of mankind and animals justly entitles them to." T. S. C.

Analysis of Continental Journals.

By G. Fleming, M.R.C.V.S., Royal Engineers.

INTESTINAL MYCOSIS AND ITS RELATIONS TO ANTHRAX.

Professor Wagner, of Leipsic, in the *Archives der Heilkunde*, furnishes a good article on the relation of Mycosis of the intestines with Anthrax, in which it is remarked that the parasitic affections of these organs are now demonstrated by such a large number of observations as to warrant their being placed in the nosological series of diseases. The object of his paper is to determine the intimate connection existing between this mycosis and Malignant-pustule or Anthrax. Seven cases observed by him showed that intestinal Mycosis is produced in the same conditions as Anthrax, and that it is manifested at the same time as the pustule, or even without the production of this cutaneous lesion. In nearly every case rapidly terminating in death, a microscopic examination was most carefully made, and this led to the discovery of *Bacteridia* in every shape in almost all the organs.

The mucous membrane of the stomach was least frequently infected; in six cases out of seven it was perfectly normal. In the small intestine the folds and mesenteric insertions showed most parasites; the large intestine was more seriously involved at its commencement than at its inferior part; but no localisations analogous to those which characterise Typhoid fever, Dysentery, Tuberculosis, &c. It is generally the epithelium which the parasites first attack; then they pass into the tissue of the mucous membrane, either on the papillæ or in the interstices of the tubular glands. The latter may be completely filled with them, though this is rare. Once located in the mucous membrane, they pass into the blood and lymphatic vessels, where they give rise to hyperæmia and hæmorrhages. It is not easy to determine the manner in which they pass into these vessels, and consequently the hæmorrhages consecutive to their introduction cannot be explained with any certainty. Whether there is hæmorrhagic congestion, lesion of the vascular walls, or the production of thrombosis, one fact is certain, viz. that this passage of the parasites into the vessels leads to a considerable amount of disturbance in the circulation; and this trouble is manifested consecutively by the sero-purulent infiltration of the mucous membrane, and by the extreme fragility of this tunic.

This process occurring in the mucous membrane extends to the tunic immediately subjacent, where the most abundant hæmorrhages and exudations take place. In this tunic the exudations are generally of a fibrino-purulent nature, and are mixed with blood. The muscular tunic is considerably weakened in consequence of these lesions, and a considerable dilatation occurs in different places. The other portions of the digestive mucous membrane present all the alterations observed in an intense catarrh.

The peritoneum is hyperæmic, even in those parts which do not correspond with the diseased portions of the intestine, and in its cavity are found a large quantity of parasitic elements. These even penetrate into the retro-peritoneal cavity, in finding their way by the mesentery and meso-colon.

The parasites which enter the vascular system are transported to the mesenteric lymphatic glands, as well as those of the mesocolon, where they produce the same hyperæmic, hæmorrhagic, exudative, and neoplastic accidents. It is remarkable that the origin and branches of the vena portæ did not present, in Wagner's cases, the considerable agglomerations of parasites which have been noted by Buhl and Waldeyer.

The blood also presented, in addition, a diminution of fibrine, a variable quantity of filiform bacteria, and masses of white globules.

The brain was not altered except in two cases, and in these the alterations were evidently of an embolic nature. The other organs did not offer anything characteristic; hyperæmia, hæmorrhages into the lungs, and albuminous or albumino-adipose degeneration of the kidneys. An important fact was noted in the condition of the spleen, which was not diseased in every case, and in those instances in which bacteria were found they were not numerous.

In all the cases which came under Wagner's observation the individuals had worked among hair and other animal products, and there could be no doubt that the parasites were derived from these materials. He was also inclined to believe that these people had introduced the germs of their disease through the digestive organs, by eating while at work. In one case of Malignant-pustule, the same kind of bacteria were discovered by means of the microscope in the pustule and the intestines. In this instance only could the possibility of the introduction of the parasite by the skin be admitted. In the opinion of Wagner, intestinal Anthrax is not analogous to the general affections produced by the Malignant-pustule of the skin; for in the last there are the metastatic abscesses

characteristic of pyæmia, or rather symptoms of septicæmic infection.

From the facts adduced, Wagner concludes that there exists in the intestines, as in the skin, a special form of disease directly produced by parasites, and which is identical with the Malignant-pustule.

WHAT IS THE ELEMENT IN ASPHYCTIC BLOOD WHICH FIXES THE NORMALLY DIFFUSIBLE OXYGEN?

C. Schmidt, and after him Pflüger, has pointed out that the blood of asphyxiated animals, when exposed to oxygen, fixes a certain quantity of that gas: that is to say, the blood does not give up this quantity *in vacuo*. But, instead, it yields an equivalent of carbonic acid. Whence the conclusion, that the asphyctic blood contains substances very readily oxidizable, which take the oxygen and give off carbonic acid.

From the *Arbeiten aus der Physiologie* we learn that Afonassiew, at the instigation of Ludwig, has undertaken the task of determining in what constituent element of the blood must be sought those oxygen-absorbing substances which are developed under the influence of asphyxia, and whether they are in the serum or the globules. To ascertain this, he has mixed the serum obtained from asphyctic blood on the one part, and the blood itself on the other, with a certain quantity of oxygen, or, which amounts to the same thing, with arterial non-asphyctic blood, the richness of which in carbonic acid and oxygen was known.

The gasometric analysis of the mixtures has shown that the asphyctic serum does not fix oxygen, and does not yield carbonic acid; but, on the contrary, asphyctic blood with its red and white globules, diminishes the oxygen, and yields carbonic acid. This proves that the readily oxidizable substances in such blood, are contained in the red (and white?) globules, and not in the serum.

ARTHRITIS OF FOALS.

In *Virchow's Archives* for 1873 (Band 58) Professor Böllinger, late of the Zurich National Veterinary School, has published some interesting researches of an anatomo-pathological character which he has made on the "arthritis of foals," a malady whch appears to prevail somewhat frequently and severely on some parts of the Continent.

Böllinger first studied it in 1869, at the stud farm of Graditz, Silesia, where it prevailed as an enzöoty, and caused considerable loss. In that State establishment, there were at that time forty-seven foals affected with the disease, and in 1870 twelve; not reckoning nineteen somewhat benignant cases, there remained forty, of which twenty-nine died: or a mortality of seventy-two per cent. In seventy-five per cent. of the cases, the disease appeared during the first three weeks after birth; of the forty above mentioned, twenty became affected in the first week, ten within fifteen days, and the others in the fourth to the sixth week. The average duration of the malady in the twenty-nine fatal cases was seventeen days; in eighteen cases death occurred before the fifteenth day; and the appearance of the infection of course coincided with the parturition season: in the months of April, May, and June.

The principal symptoms were violent fever, and very hurried respiration, and more or less apathy for the teat. Lively and attentive at the commencement of the disease, the young creatures were soon seized with prostration and extreme feebleness; they became emaciated; the coat was rough and lustreless; frequently there was nasal catarrh, tumefaction of the submaxillary lymphatic glands, sometimes capillary bronchitis, and in many cases diarrhœa. With the majority there was observed tumefaction of certain articulations, particularly the hock-joint; these were more or less swollen, hot, and painful. The animal often went lame, and frequently enough there were extensive subcutaneous abscesses. Towards the end the foals became sleepy and comatose, and had dysenteric diarrhœa, the evacuations being liquid, gray, and very fetid; the visible mucous membranes were often yellow-tinted, owing to icterus having set in.

In three autopsies made at Graditz, Böllinger found the following lesions:—Double broncho-pneumonia of the anterior lobes; pulmonary abscesses; purulent arthritis; intramuscular abscesses; osseous caries; fatty degeneration of the muscles of animal life, especially of those near the diseased articulations; and fatty degeneration of the heart, liver, and kidneys. In the intestinal canal were the lesions of catarrhal enteritis, accompanied by hyperplasia of the mesenteric glands. Neither on the living animals nor at the autopsies did Böllinger remark the signs of rachitism to which Professor Roloff, of Halle, allotted the arthritis of young animals.

In the three above-mentioned autopsies, Böllinger neglected

to examine the umbilical cord: negligence which is often committed by veterinary surgeons, and all the more to be regretted as, according to him, most frequently the origin of the disease in question is to be traced to this part. Such at least was the case in two other autopsies since made—one at Zurich, and the other at Munich in concert with Professor Franck, of the Veterinary School there. The two foals, which were aged—one three weeks, the other five weeks, offered the following lesions:—Inflammation and thrombosis of the umbilical vessels, continuation of the thrombosis of the umbilical vein (in process of suppuration) into the vena portæ, where there was likewise thrombosis, as well as into its hepatic ramifications. In one of the cases there was also thrombosis of the pulmonary artery; double pleurisy, with pericarditis; purulent arthritis of several articulations; vast intra-muscular or subcutaneous abscesses, and cutaneous erysipelas. In the other case there were pulmonary abscesses, a circumscribed pleurisy, purulent irido-choroiditis, and, lastly, in addition to general anæmia, there was great tumefaction of the bronchial and mesenteric glands.

Relying on these later autopsies, Böllinger admits that the whole pathological *processus* is as follows:—The inflammation of the umbilical vessels, particularly of the vein, with its decomposed and softened thrombus, which is communicated to the vena portæ, forms the point of departure, or rather the source, of a metastatic pyæmia, to which the embolisms in the lungs are sometimes directly due; or at other times, in consequence of the septic alteration in the blood and the general tendency to inflammations, there are metastatic inflammations of the serous and synovial membranes (resulting in pleurisy, pericarditis, arthritis, &c.), of the lungs, iris, and choroid membrane; abscesses in the muscles and cellular tissue: in a word, all the anatomical and clinical alterations which constitute the complicated arthritis of foals.

Böllinger, according to this view, finds a complete analogy between the characteristic lesions of the arthritis of foals, and the alterations observed in new-born infants as a consequence of inflammation of the umbilical cord, and particularly of the umbilical vein: consequences which Baumeister and Rueff have already otherwise well described as occurring in animals. He is also somewhat disposed to admit, on the other hand, that the arthritis of calves and lambs has its point of departure in the analogous alterations in the circulatory apparatus of fœtal life. An autopsy which he has made of a calf since the publication of his researches in *Virchow's Archives*, and which appeared in the Augsburg *Wochenschrift* (1874

No. 26), showed, in fact, that there had been metastatic pyæmia, which had commenced as a purulent omphalophlebitis.

With regard to the causes of this inflammation of the umbilical cord and its vessels in new-born animals, the operation of external influences may be admitted, and particularly traumatism, induced by impregnation and infection of the umbilical wound, with the filth of the litter, with excrement and stale urine, and the want of care of the umbilical immediately after birth. There may even exist a special infection in consequence of overcrowding in badly ventilated stables, as is observed in certain breeding establishments: cases quite analogous to the puerperal infection which appears in maternity and other hospitals. If the mares are not affected, if they are not seized with puerperal fever, this arises from the circumstance that they are not so often subjected to manual operations, and are much seldomer assisted in labour than lying-in women. It is now recognised, with regard to cattle, that if vitulary fever is frequent among them, this is owing to the too great hurry with which farmers seek to expedite the act of parturition.

To Böllinger's excellent paper, Zundel adds an interesting observation which he owes to Grad, a veterinary surgeon of Wasselonne, Alsace, which to some extent confirms Böllinger's views. Grad's services were called into requisition about a year ago, with regard to an umbilical hernia occurring in a foal a year old. The hernia was only about the size of an egg; and as the animal had always been in good health and condition, Grad did not hesitate to operate by suture, according to Marlot's procedure. After throwing the foal on its back, he distinctly felt in the middle of the hernial tumour a firm cord, the thickness of a finger, which passed from the skin to the abdominal cavity by the umbilical opening; this was evidently the internal portion of the old umbilical cord. Grad operated, notwithstanding this obstacle, and applied the suture in such a manner as to include the cord in the part to be amputated. For eight days the animal continued lively and well; but soon after this time it became dull, a hard tumour formed in the region of the shoulder, an the hocks were tumified; in fact, there were all the symptoms of the arthritis of foals. As a consequence of the traumatic inflammation of the umbilical cord, there was every sign of metastatic pyæmia, and notably of inflammation of the articular synovial membrane. The suture on the cord was the evident cause of this unlooked-for complication.

The foal remained seriously ill for some weeks, and only

recovered because of its robust constitution. At present it shows capsular distension in both hocks.

FOREIGN BODY IN THE SPLEEN.

Hahn, a military veterinary surgeon at Landau, has recently made known (in the Augsburg *Wochenschrift*) a somewhat remarkable case of a foreign body in the spleen of a mare. The animal became suddenly affected with slight colicky attacks and frequent attempts to micturate; it was dull and dejected, looked often at its flanks, and the body was covered with perspiration; the respiration was accelerated, short, and painful, and accompanied by a peculiar trembling of the abdominal muscles; there was much fever; the pulse numbered eighty beats per minute, and was small and weak; the appetite was completely lost. Exploration of the rectum, by introducing the arm as deeply as possible, led to the discovery, in the middle inferior part of the abdomen, of a long hard body, one extremity of which terminated in a blunt point, but the other could not be felt. Vaginal exploration did not yield any further information. Energetic antiphlogistic treatment appeared to relieve the mare; it did not perspire so much, ate some green forage, passed some soft fæces, and the respiration was calm, though the pulse still remained very accelerated.

With alternations of better and worse, the animal lived for seventeen days, during which time several rectal explorations always resulted in finding the strange substance, though without leading to its nature being discovered. On the seventeenth day alarming symptoms became manifest; the mare was in a lather of perspiration, lying down and getting up continually, and greatly agitated; it refused food and water, the fever was most intense, and the respiration greatly hurried. By a rectal exploration, a large, soft and very painful tumour was felt around the foreign body, situated to the left and in the region of the flank.

The animal perished next day, and the autopsy was made a few hours after death. Besides the lesions of diffused peritonitis, with numerous plastic exudations—some old, others recent—the spleen was discovered to be pushed backwards and greatly enlarged, measuring seventy-five centimètres long and twenty-four broad ($29\frac{1}{2} \times 9\frac{1}{2}$ inches), with a fluctuating tumour at the base; an intestinal loop adhered externally to the wall of the tumour by a yellow plastic exudation, but it had no communication with the abscess. On opening the tumour of the spleen, there escaped a large quantity of ichorous fluid of a brownish-gray colour, thick

and very fetid, mixed with much gangrenous *débris*. The cavity of the abscess was continued into the body of the spleen and towards its point, forming a wide canal; in this was found a long piece of wood—a chip of an oak prop, nearly twenty-one inches long and about half-an-inch thick, the ends of which were blunt. The interior of the tumour was closely divided by septa, and filled with cheesy puriform matters in process of decomposition. Hahn endeavoured, but in vain, to discover how a body of this kind could be introduced into the spleen; the skin did not offer any trace of a wound, and it could not have been by the vagina or rectum, for no cicatrix had been observed there. Perhaps it had obtained access by the mouth; but even there no old lesion could be found—not even a trace of communication between the intestinal loop fixed to the spleen and the interior of that organ.

Zundel remarks that this case has some analogy to that reported by Baillet of Bordeaux, some time since, in which a chronic abscess containing a knife was found in the spleen of a fat ox slaughtered for food. But the introduction of a foreign body into the spleen of a bovine animal by the rumen is much more easily explained, than its penetration to the spleen of a horse.

ARTIFICIAL EYES FOR HORSES.

In the *Magazin für die gesammte Thierheilkunde* (1873, second part) Hertwig, professor at the Berlin Veterinary School, draws attention to an improvement in the artificial eyes which are sometimes employed, particularly on the Continent, to palliate the unsightliness resulting from the extirpation or atrophy of the horse's eye from accidental causes. It appears that Schmidt, veterinary surgeon in the Bavarian Army, was the first, in 1850, to make use of these articles in the equine species; these were made of glass, and more recently those made of porcelain and gutta percha have been tried; but the weight and fragility of the first two, and the softness of the latter (increased with the warmth and moisture of the eye), have proved serious hindrances to their general adoption. Of course, the expensive contrivances devised for the monocular human patient could scarcely be recommended except in rare instances. Hertwig has successfully employed horn as the material out of which to fabricate the artificial eye, and it has the advantage of being cheap and lighter, and much less brittle than glass. This eye is merely a smooth capsule or shell of dark-coloured horn, which any turner can throw off in a few minutes. It

varies in size to suit different orbits, but it is generally about $1\frac{3}{4}$ inch in diameter, 2 lines in thickness, and nearly half-an-inch in width. The outer face corresponding to the cornea is highly polished, and indented by a circular narrow groove ($\frac{1}{4}$ line deep), to represent the pupil. The margin is well rounded and smooth; the inner concave surface is not polished, but smooth; and when ready for use, it should not weigh more than about eleven to twelve grammes for a large horse, and nine to ten for a small one (6·208 to 6·773 drachms, and 5·079 to 5·644 drachms). Hertwig has also made them of white horn with a brown iris, and a long darker-coloured pupil. The effect of an artificial eye of this description, especially when seen at a distance, is astonishing; indeed, the illusion is complete, for it looks exactly like a real eye, and the natural appearance of the horse's face is quite restored. The eye is easily maintained in the orbit, and rarely causes an increased mucous secretion or any other untoward effect. Should a little mucus cover it, this can be readily removed without dislodging the shell. The horse does not object to it, for, indeed, it is a comfort to the animal; it possesses the great advantage of preventing the entrance of flies, dust, and other injurious bodies, to the disagreeable-looking cavity. It must be borne in mind that it should not be applied until all inflammation, suppuration, or granulation of the remains of the lost eye have disappeared. There is no difficulty whatever in fixing it in the orbit. With the thumb and first finger of the left hand the upper eyelid is raised, and the edge of the shell (which has been previously wetted, and is lheld in the other hand) is introduced beneath it; then the power lid is depressed, and the inferior border of the capsule placed behind it. A slight movement of the eyelid to and fro with the fingers, and which the horse sometimes does for itself, adjusts the piece in its proper place and effaces any wrinkles which may have existed in the eyelids. To remove it, all that is required is merely to draw down the lower lid a little, pass a smooth probe behind the inferior border of the horn, and with a gentle leverage the piece comes out.

In some cases, when the eye has been extirpated for a long time, the eyelids are so contracted that the opening between them will not admit a capsule of the proper size very easily. It is then better to introduce a smaller one, and leave it in the orbit for a day or two, when it will be found that a larger piece can be inserted.

It is not absolutely necessary to remove the artificial eye every day; it may remain for a week; but it is best to have two, as the air, moisture, and dust remove the polish from

the outer convex surface, and this requires a little time to restore by means of a bit of cloth, whiting, oil, and hand-rubbing. The spare one should always be slightly oiled before put away. With such management, a horn capsule will last for nearly a year. The eye and eyelids should be well cleansed every time the capsule is about to be inserted.

Hertwig gives drawings of the artificial eyes, and states that they can be obtained of Henitz, Instrument Maker, 82, Dorotheenstrasse, Berlin; the price being 15 silbergroschen (about one shilling).

REDUCTION AND CURE OF STRANGULATED INGUINAL HERNIA IN THE HORSE, WITHOUT DILATATION.

In the *Recueil* for this year, M. Barry, of La Ferté-Milon, describes his method of operating for strangulated inguinal hernia. After stating that the reduction of this hernia is one of the most serious operations the veterinary surgeon has to perform, and acknowledging that he had been very unsuccessful with the recognised modes of procedure; he asserts that the one to which he is now about to refer is that which has constantly yielded favorable results, and it is as easy as it is simple.

The following is the procedure:—After having placed in readiness a quantity of pure oil, a convex bistoury, a suture needle, and a piece of strong twine one to two yards in length disposed as a large bleeding cord, the patient is thrown and fixed on its back as for castration; and the envelopes of the testicle are carefully incised, so as to lay bare the hernial sac. When the knuckle of intestine has been exposed it is dressed with the oil all over, and even gently withdrawn a little in order that the inflamed part may likewise be oiled. Then the testicular envelopes are formed into a kind of funnel, into which a quantity of the oil is poured, with the object of more thoroughly lubricating the intestine, as well as the spermatic cord and inguinal ring (into which the index-finger is introduced), and ensure the contact of the oil with every part of the strangulation. This done, one hand inserted in the rectum attempts to reduce the hernia by gentle internal traction, while the other assists the reduction of the loop by taxis, in moving the intestine from side to side and up and down, and in doing this to allow the oil to penetrate the canal the viscus has to traverse; this movement powerfully assists in the accomplishment of the operation.

The oil has a triple advantage:—1, it prevents the irritating action of the external air; 2, it greatly facilitates the

gliding of the intestine, which has become dry from the inflammation; 3, It soothes the latter to a certain extent. There is nothing to be apprehended from the ingress of a little into the abdomen.

If, nothwithstanding what has been recommended, the hernia resists attempts at reduction, this resistance can be overcome in combining the action of the oil with puncture of the intestine, which was resorted to in human medicine a few years ago.

Barry mentions a case which fully illustrates his mode of reduction of inguinal hernia, and which he was called upon to attend. The animal was lying on the right side, the hernia was on the left. The disordered movements which it had exhibited were now succeeded by a suspicious calmness, cold perspiration, small thready pulse, torpor, and other indications which betrayed the approach of death. Obtaining the consent of the owner to operate, he had the horse put in position, and on incising the tunics of the testicle he found the duplicature of intestine of a deep-red colour, and even livid in three patches: always a very grave feature. The loop was well oiled by the finger, and some oil was poured into the cavity in the manner above described; all the parts were thoroughly lubricated, and the index-finger was introduced around the walls of the inguinal canal, which permitted the oil to descend more readily, and assisted in bringing the strangulated intestine a little further out. This organ was greatly distended and very voluminous, and puncture suggested itself; this was done by means of a suture needle in three places for two thirds of its length; at the third puncture a slight noise was heard, and little air-bubbles appeared around the opening. Barry's right hand in the rectum, in concert with the left, which moved the flexure about two or three times, then promptly reduced the hernia.

Castration was afterwards performed by ligature, which Barry prefers to the clams: these irritating the wound by the great pressure they exercise on the tissues already inflamed. In the covered, as well as in the uncovered operation, the author has always been successful with the ligature. The horse was in a short time afterwards at work.

Barry asserts, in commenting on this procedure, that the abdominal organs are not always so extremely sensitive to contact with the air as is generally believed; and he incidentally alludes, in support of this statement, to the case of a foal which he castrasted, and which the following morning had the omentum hanging as low as its hocks—hernia of the peritoneum. This extruded membrane was red and

very inflamed, and Barry was rather puzzled what to do; however, he had the foal thrown; with the right hand in the rectum he seized the omentum, while with the left he pulled it out until the white non-irritated peritoneum appeared; then with his two hands pulling in opposite directions to stretch it, he caused the owner to amputate the inflamed parts with a convex bistoury; this done, internal traction completed the business.

The animal recovered without manifesting the slightest derangement.

ROYAL COLLEGE OF VETERINARY SURGEONS.

LETTER FROM PROFESSOR McCALL RELATIVE TO THE LATE EXAMINATIONS IN SCOTLAND.

VETERINARY COLLEGE, GLASGOW;
February 16*th*, 1875.

MR. M. TREACY'S EXAMINATION.

SIR,—I beg to acknowledge receipt of your favour of 3rd inst., regarding Mr. Treacy's examination in Glasgow in December last. I regret the Committee arrived so hastily at the conclusion stated in your note, that I had declined to furnish them with the information necessary to enable them to investigate the above subject. Nothing could be further from my desire or intention. I am of opinion, however, that I was entitled to expect from the Committee the grounds upon which such an investigation proceeded, or a specification of the allegations leading to such an interference, when called upon to give *categorical* answers to certain queries.

At the time I received your letter dated the 22nd *ultimo*, I was in total ignorance of the grounds for the resolution you therein quoted, and it was only on the February number of the *Veterinarian* coming into my hands that I discovered the circumstances leading to such a resolution on the part of the Council of the Royal College of Veterinary Surgeons; and the leading spirits who had induced the Council to take such a step.

Leaving out of view the terms of the resolution—which assumes before the least inquiry that there was an irregularity in the examination—I have no hesitation in laying before the Committee all I know of the matter.

According to the various documents in my possession, the following would appear to be a truthful account of Mr. Treacy's

connection with the Veterinary Colleges in Scotland :—On the 23rd November, 1872, Mr. Treacy entered the Clyde Street Veterinary College, and paid his fees for Session 1872-73. In July 1873 he presented himself before the Examining Boards of the Highland and Agricultural Society and of the Royal College of Veterinary Surgeons respectively ; and whilst successful in passing his first professional examination before the Highland Society, was unsuccessful in passing the examination of the Royal College. In November of the same year he joined the New Veterinary College, paid his fees for Session 1873-74, and in December was examined, passed, and registered for his first professional examination by the Royal College of Veterinary Surgeons as a student of the New Veterinary College. Mr. Treacy continued to study the remainder of that winter session at the New Veterinary College (see class tickets), and in April was certified by Professor Williams eligible for his second professional examination before the Highland and Agricultural Society's Board of Examiners. He passed and received the Veterinary Diploma or Certificate granted by that Society. Mr. Treacy now being released from his studies till the College would be open in November, left Edinburgh, but in October wrote, according to Professor Williams's statement (see February number of *Veterinarian* for 1875, p. 152) a letter "asking if he" (Professor Williams) "would give him a certificate to pass his final (or second) examination at Christmas, as he wished to complete his education with him."

"A reply was sent to the effect that he could not possibly be allowed to pass his final examination at Christmas, but if he returned in January he would be qualified for his final examination in April."

Now, admitting that the main facts in the quotation are correct, on what authority did Professor Williams refuse Mr. Treacy's request? Can he point to any clause in the Charter or Bye-Laws, &c., of the Royal College of Veterinary Surgeons which gives him the power, or justifies him in exercising such control over his pupils?

His refusal, I apprehend, was a *clear* violation of the Bye-Laws of the Royal College of Veterinay Surgeons. Mr. Treacy attended the Lectures delivered in the New College during the whole of the Winter Session of 1873, after passing successfully his first professional examination. That being so, he was eligible to be examined for his final professional examination at Christmas, 1874, and Professor Williams was not justified in refusing his request.

As an individual I neither know, nor desire to know, the reasons which induced Mr. Treacy (and other students before and

since him) to leave Edinburgh and come to Glasgow; but as the Principal of this College, I have a right to know what classes the student has attended elsewhere, in order to prevent injustice, imposition, or a breach of the rules of the Royal College of Veterinary Surgeons; and the only evidence I ask, or accept, are the class certificates granted by the Lecturers in the college from which the student has come.

Now, I find that the class certificates granted by Professor Williams and his colleagues in Mr. Treacy's case are either valueless as misrepresentations, or that an important statement made by Professor Williams before the Council bearing on the same subject is inaccurate.

The certificates are before me, and the statement will be found in the February number of the *Veterinarian* already referred to. One of the certificates only in the mean time I shall copy. It is as follows:—"I hereby certify that Mr. J. Treacy has very regularly attended my course of lectures on Veterinary Medicine and Surgery during the Winter Session of 1873-74. (Signed) W. Williams, Professor."

"The statement is—"He (Treacy) was rejected on his first examination in July, 1873, but passed it at the following Christmas. He stayed for *some time* during the winter session after passing his first examination, and then commenced practising in Ireland, &c."

Now if the "*some time*" was a less period of time than from the beginning of January till the termination of the winter session, then the certificate is inconsistent with fact, as it must be evident that Mr. Treacy could not have been "very regular" in his attendance and at the same time "practising in Ireland." But be that as it may for the present, was it not Professor Williams who granted a certificate to the Secretary of the Highland and Agricultural Society of date April, 1873, certifying that Mr. Treacy was eligible at that time for his final examination for the diploma of that Society?

It must have been Professor Williams, and if so, and the statement already referred to in the *Veterinarian* be true, then it follows that Professor Williams deliberately and in possession of the whole facts granted a certificate to the Secretary of the Highland Society inconsistent with his statement in the *Veterinarian*, which must have misled the Society; and a class certificate which misled me. On the other hand, if these certificates were true, then Mr. Treacy did attend, not for "*some time*," but during the whole period of the winter session of 1873-74 very regularly, was eligible for the Highland Society's examination, and Professor Williams's statement to the Council was unfounded in fact.

But further, it must be consistent with Professor Williams's knowledge that the same board which rejected Mr. Treacy on his first professional examination in July, 1873, also rejected at least other two students whose names I consider it unnecessary to mention, and that these two students, along with Mr. Treacy, passed their first professional examination in December, 1873.

It must, moreover, be well known to him that he certified these same two students as eligible for examination at Christmas, 1874; and that they came to Glasgow, and were examined in the Museum of the Glasgow Veterinary College in his presence, along with Mr. Treacy and the other students of the Glasgow Veterinary College. Were these two students eligible because they merely returned to the New Veterinary College? If so, on what grounds was Mr. Treacy considered ineligible, seeing he wrote to Professor Williams as early as a month previous to the commencement of the session, asking to return to the Professor for his examination at Christmas? or did these two students refuse to be kept back, and Professor Williams, finding that he no legal power under the charter to prevent them, at the last moment accede to their request?

I leave Professor Williams to explain such inconsistent, partial, and arbitrary treatment of his pupils.

And now for Mr. Treacy's connection with the Glasgow Veterinary College. Prior to the opening of the present winter session, Mr. Treacy wrote a letter to Professor Fordie stating that he had passed, and received the Highland and Agricultural Society's Diploma in April last; that he had also passed his first professional examination of the Royal College in December last; that he had class tickets showing his connection with the New Veterinary College till April last, and wishing to know if he could be received as a student in Glasgow and allowed to present himself for his final examination in December. Professor Fordie, in reply, informed Mr. Treacy that one of the rules of the Glasgow Veterinary College was to the effect that "At the end of each sessional course of lectures, each pupil was subjected to a preliminary examination conducted by the professors, and if the result of the examination was unsatisfactory, then the pupil was not eligible for examination," but that if Mr. Treacy produced his class tickets from the commencement of his collegiate career, and they were found to be correct, and he was considered fit to stand a successful examination, that he would be allowed to appear before the Board at Christmas.

About the middle (18th) of November Mr. Treacy presented himself, and on production of the following certificates was enrolled as a student, viz.—

No. 1. Certificate of Educational Examination passed, dated 25th Nov., 1872. (Signed) Dr. Donaldson.

No. 2. Receipt for £13 6s., paid. Clyde Street Veterinary College, dated 23rd Nov., 1872, for session 1872-73.

No. 3. Class Certificate for winter and summer sessions of 1872-73.

No. 4. Certificate by Secretary of Highland and Agricultural Society as having passed first professional examination, dated 16th July, 1873.

No. 5. Receipt by Dr. Dunsmure for £7 7s., being fee for first professional examination of the Royal College of Veterinary Surgeons, dated 7th July, 1873.

No. 6. Receipt for £13 6s. paid. New Veterinary College, Gayfield, Edinburgh, dated 31st October, 1873, being fees for session 1873-74.

No. 7. Receipt by Secretary of Highland Society for £2 2s., being amount of entrance fee for Society's Veterinary examination of (date) 6th April, 1874.

No. 8. Class certificates by Professors Williams, Andrew Smith Melville, and J. Vaughan, for attendance during the winter session of 1873-74.

These documents prove, or ought to prove if accurate, that at the time of Mr. Treacy's admission to the Glasgow Veterinary College, he was in the exact position of having passed his first professional examination in December, 1873; of having completed four months of the following winter session, and that all the time he had now to remain at *any veterinary college* before being eligible for his final professional examination was till Christmas, 1874. That period he remained, and regularly attended the lectures delivered within the Glasgow Veterinary College and on its expiry I certified that Mr. Treacy was eligible for his final examination. Mr. Treacy appeared, passed a most creditable examination, and received the diploma of the Royal College of Veterinary Surgeons.

And now I stand in the enviable position of being told that I have committed "a gross violation of the bye-laws" of the Royal College of Veterinary Surgeons, of being a party to the granting of "a certificate that a student had studied the proper time, and that he really had not," and other strictures not of the most complimentary kind. Does the Council of the Royal College of Veterinary Surgeons require to be told that it is contrary to law and justice to sit in judgment and condemn a man untried, and more especially to give publicity to statements and opinions while the case is undergoing investigation?

Such, however, is the gentlemanly treatment to which I am

subjected, and without a cause, as I shall now prove by a reference to the only test by which this case can be tried and decided, viz.: —Bye-law 31 of the Royal College of Veterinary Surgeons, corroborated by the practice of my accuser. It is as follows:— "No student shall be eligible for the second or final examination until he has attended at least one full winter session after passing the first examination." Did Mr. Treacy then implement that bye-law? In my opinion most unquestionably he did, and, as proof, I again refer to his class tickets.

In this view, however, I am opposed by the opinions of Professors Williams and Simonds, but in the meantime I shall endeavour to prove to the Committee that these gentlemen stultify each other's opinion. It will be remembered that when Mr. Treacy desired to return to the New College in November, and to present himself for his final examination at Christmas, 1874, that Professor Williams wrote to him "that he could not possibly be allowed to pass his final examination at Christmas, and that he was not eligible till April, 1875."

On this point Professor Simonds says (see *Veterinarian* for February, 1875, p. 153), "If Treacy had been in attendance at Professor Williams' school subsequently to passing his first examination at Christmas, until the end of the session (which he was, see class tickets), and if he had returned to Professor Williams (which he offered to do), he would have been eligible at Christmas."

If, then, Professor Simonds' opinion be the correct interpretation of the bye-law, and to my mind no other interpretation can be given it, then Professor Williams acted illegally in refusing Mr. Treacy's request, and any irregularity that may have arisen on my part is the result of his (Professor Williams') refusal.

And if it is not a correct reading of the bye-law, and it is the fact that Professor Williams certified the other two students as eligible for their final examination (who were *in pari casu* with Treacy, except that he came to Glasgow and they returned to Edinburgh), then he knowingly committed a grave irregularity.

The head and front of the whole offending, if there is any offence, taking Professor Simonds' view, and Professor Williams' own practice with the two students is, that Mr. Treacy studied the last portion of his winter session at one College when they think he should have studied at another. Is there anything in the bye-laws or practice which justifies this? I submit there is not.

Professor Simonds says, "the examination in question was a gross violation of the bye-laws, and Professor McCall should be called upon to explain how it was that this student had been examined, not having been in attendance at his school 'one winter session' after having passed his first examination."

Might I remind Professor Simonds, that as he is judging my conduct by the bye-law, he ought to quote the bye-law without adding, or taking from it. I shall relieve him of that trouble. The bye-law does not say that the student is to be in attendance at his or her school, at one, two, or three schools, but simply no student shall be eligible for the second or final examination, until he has attended at least one full winter session after passing the first examination."

Now, what is the practice as to this? Professor Williams' practice apparently is, from January to April, and from the beginning of the session till January. Professor Simonds endorses that view, but says it must be at the same College. But I can find no warrant for that, and neither can they. In my view, and with all deference, I submit that the student should attend one full winter session, and if he does, he is entitled to insist on being examined, and it does not matter whether he attends half at Glasgow College and half at Edinburgh or London.

Mr. Treacy attended one full winter session after passing the first examination, and therefore he was eligible for the second examination, and being eligible he appeared under my auspices.

And now that I have disposed of the objections which have been taken to Mr. Treacy's examination in Glasgow, let me advert to the insinuation made by Professor Williams before the Council (see *Veterinarian* previously referred to), to the effect that the examinations in Glasgow were not as strict as in Edinburgh.

This is a reflection more on the Examiners and on the Royal Veterinary College of Surgeons, who appoint the Examiners, and should see (and do see, let Professor Williams say what he pleases) that they are men of standing and perform their duties, than on me, and I might well leave it for them to deal with the matter. Still it seems from what went before that it is meant to reflect on me.

As Professor Williams has not given his reasons for the insinuation or blamed any one in particular, I cannot deal with it in the terms I should desire. It is true that out of a given number of students presenting themselves for examination, a larger number of Glasgow than of Edinburgh students have as yet been successful in passing examinations, and as the same Board of Examiners discharge the double duty, it follows that either the pupils of the Glasgow Veterinary College are better informed for their examination, or the Examiners do not discharge their delicate and important duty in an impartial manner.

Surely the first inference is as fair as the other—certainly it is the more charitable—that a respectable body of gentlemen—gen-

tlemen with characters at stake, should perform their duty for which they have been specially selected, is only reasonable. And certainly no man, without proof in his possession of the most convincing kind should dare to insinuate the contrary.

So far as I am concerned, there is no ground whatever for saying that in any shape whatever I was concerned in making the examinations less strict in Glasgow than in Edinburgh, and there is no ground for saying that the Examiners made the examinations less strict. I cannot characterise the insinuation other than a base calumny and a most gratuitous and wanton insult.

From personal observations Professor Williams can know but little of the Glasgow examinations, for he has only been present on one occasion, viz., last Christmas, and if he had been guided in forming an estimate of the examinations founded on his experience of that day, it ought to have left a different impression on his mind to what apparently it has done. I wish it had, as it would have saved me from divulging facts which may give offence and pain to persons who are in no way to blame for the annoyance to which I am subjected.

Nay, I shall even go further, and state that there never was an Edinburgh student examined in Glasgow who did not wait upon me and tender his thanks for the kindness he had received at the hands of my colleagues, my students, and myself, and I only now make mention of the last examination of these gentlemen, and refer to the facts, because I cannot avoid it.

At the last examination six students appeared from Glasgow and two from Edinburgh.

The Glasgow students and one of the Edinburgh students were successful in passing a highly creditable examination; the other Edinburgh student was rejected.

Professor Williams made a statement that a student rejected the previous day in Edinburgh, and hailing from the Dick Veterinary College, was allowed to stand a second examination, and he insisted that his rejected student should be brought back, and after much deliberation and discussion (in which I took no part) the Chairman consented, the young man was brought back, did better, and was allowed to pass.

Was the examination of that student conducted with more or less stringency than it would have been in Edinburgh? If more, why insinuate that the Glasgow examinations are more simple than in Edinburgh?

If less, why had that student such a *difficulty* in getting out, and why plead for a second examination?

Was the examination of that student more stringent than that of the Glasgow students, and was partiality shown?

It was not, and Professor Williams dare not say otherwise, and as regards partiality, I think a better case might be made out as against Edinburgh than Glasgow, for this reason, that his student was allowed to come up after his rejection and stand a second examination—a concession which never was asked, or granted, in favour of a student educated within the Glasgow Veterinary College since its foundation. But I wish to make out no such case. I believe the Examiners did their duty according to their own honest convictions, and that no partiality was shown, or intended to be shown. In conclusion I would just remark, that I have been called upon, after being convicted without being heard and without proof of an irregularity which never took place, and that, supposing it had taken place, might fairly have been set down as an error in judgment. Could the same be said of Professor Williams' conduct? I make no comment, but as the Council of the Royal College of Veterinary Surgeons have considered it consistent with their duty to make the public and the profession acquainted with this subject through the pages of the *Veterinarian*, I have to request, as an act of justice, that they will secure this letter a place in the forthcoming number of the same journal, and let the members of the profession form their own opinion.

I am, your obedient servant,

(Signed) James McCall,
Principal of the Glasgow Veterinary College.

To W. H. Coates, Esq., Secretary,
Royal College of Veterinary Surgeons,
10, Red Lion Square, London.

[This letter is published at the request, and on the responsibility, of the Enquiry Committee of the Royal College of Veterinary Surgeons.—Eds.]

CENTRAL VETERINARY MEDICAL SOCIETY.

An ordinary general meeting of the above Society was held on Thursday, February 4th, at Red Lion Square, at 7 p.m., the President, J. Roalfe Cox, Esq., in the chair.

The President directed attention to a case of fracture of the patella occurring in a cob five years of age while being ridden at a slow trot, and in consequeuce of shying came in contact with a passing cab. The animal was conveyed to his infirmary, when,

the fracture being very evident, he was destroyed. On the *post-mortem* examination considerable effusion of blood was observed over the part, and the bone was split longitudinally; one half, being drawn over the outer condyle, was capable of being easily reduced, the other half was split into several pieces. Mr. Cox thought at first that the outer condyle of the femur was fractured.

Mr. Hunting exhibited a parasite from the frontal bone of a Siberian dog. The symptoms shown by the animal were occasional sniffing and coughing. The dog had been in England some two years, and was noticed while on the sea-beach to eject something which was picked up and found to be alive at the time. The parasite (*Pentastoma tenioides*) has a flattened elongated body, with a mouth sharpened like a shark's jaw, and having serrated edges. It is also described as being found in the mule.

Mr. Rowe brought forward a specimen of exostosis on the outer condyle of the humerus of a horse which he had attended in 1866. The pain and lameness had been very great, and the destruction of the animal was desired by the owner at the time. The horse, however, recovered under treatment, and had been worked until last Christmas, when it was killed on account of old age. On opening the body some twenty small calculi were found, but the animal was never known to pass any during its lifetime.

Mr. J. Woodger, jun., related the case of a pony which had been driven some nine miles out of town and then put into a stable. Soon afterwards the animal was observed to reel and fall backwards, kicking out its legs and acting the same as in an attack of megrims. It was, however, got up, and came home all right. A similar attack occurred a few days later, and subsequently it was attacked every day on the opening of the stable door; occasionally, also, holding up the head was found to cause the fit. Mr. Woodger gave an aperient and blistered the poll, which appeared to afford some relief, as the pony had not had a return of the fits for some time.

Mr. Hunting said the symptoms somewhat resembled those of poisoning by prussic acid where an insufficient quantity had been given.

The President considered that all surmises were at fault, seeing that the application of a blister was beneficial.

The President, referring to Mr. Woodger, senior's, case of spinal affection, related November 5th, produced an atlas with deep caries of the floor of the canal. The animal had had a "stiff neck," and was at times seized with temporary paralysis, and on one occasion during the removal of a shoe at the forge, when the neck was turned towards the side, he doubled up his legs and fell down, but on being released he rose again easily.

When bridled he was subject to such attacks, but when at home and unworked was quiet. He was blistered on both sides of the neck as near the spine as possible, but one morning was found down and paralysed in the hind extremities. The paralysis soon extended to the whole of the body, and the horse was destroyed. On severing the head from the neck an abscess was cut into, and it was found that pus had forced its way partly down the spinal canal. This accounted for the symptoms on turning the neck.

The relation of the above cases and the discussion thereon occupied the whole of the time allotted for the meeting, at the conclusion of which it was announced that Mr. Woodger, jun., would at the next meeting read a ahort paper on "The Causes of Farcy and Glanders."

The proceedings then terminated.

JAMES ROWE, jun., *Hon. Sec.*

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE annual meeting and dinner were held at the Queen's Hotel, Leeds, on Friday, 29th January, thePresident, Mr. J. W. Anderton, in the chair. The following members were present, viz.—Messrs. M. Naylor, James Freeman, T. Greaves, W. Edmundson, S. Fallding, J. Cuthbert, R. Patterson, W. G. Schofield, R. Murdock, and J. S. Carter. The following gentlemen were also present as visitors, viz.—Professor Tuson, Royal Veterinary College; Mr. E. Faulkner, Manchester; and Mr. Manton, Wakefield. The following members sent apologies for non-attendance:—Messrs. E. C. Dray, Joseph Freeman, Jno. Freeman, Bale, Peter Walker, Parlan Walker, Jno. Schofield, J. Ferguson, Scriven, and the Secretary, whose absence was caused by serious illness.

The minutes of the previous meeting were read and confirmed.

The President read his inaugural address, in which he briefly reviewed existing legislation with reference to contagious and infectious diseases of cattle. He expressed an opinion that the stamping out of these diseases could not be accomplished unless the law was made compulsory, and qualified veterinary surgeons alone appointed as inspectors.

Professor Tuson then delivered an interesting lecture on "The Chemistry of Water in relation to the Health of Domesticated Animals." The lecture was an exceedingly instructive one, and gave great satisfaction. At its conclusion a cordial vote of thanks was awarded to the professor.

At the dinner the usual veterinary toasts were drunk, and an agreeable evening was fully enjoyed.

W. BROUGHTON, *Hon. Secretary.*

Veterinary Jurisprudence.

MIDDLESEX SESSION, Feb. 12.

Conviction for Fraud in Selling an Unsound Horse.

Herbert Albert Martin, 34, described as a horse-dealer, was indicted for having, on the 13th of January, obtained £84 from Captain Bridges Heathorn, of the Royal Artillery, by falsely pretending that he (the prisoner) was a member of the firm of Martin and Co., bankers, of Lombard-street, and that a horse which he was offering for sale was sound and free from vice, was fast in saddle, and had good action in harness.

Mr. D. Straight (specially retained) and Mr. Routh prosecuted; Mr. Besley defended.

On the 9th of January Captain Heathorn saw in the *Field* newspaper the following advertisement:—"*Topthorn*, a remarkably handsome brougham or riding gelding, colour bright bay without white, six years old, 15 hands 3 inches high, well bred, with plenty of substance; is a clever hunter and a good charger, master of 14 stone in the saddle, fast, with admirable action in harness. Lowest price 80 guineas. The property of a gentleman, who will warrant him sound, free from vice, and allow any reasonable trial. To be seen at Drummond Hotel livery stables, Cardigan-street, adjoining Euston-square Railway-station." Being in want of such a horse, he went on the 13th of January to the address given in the advertisement. He there saw the prisoner, and showed him the advertisement. The prisoner then said that he was a member of the firm of Martin and Co., bankers, of Lombard-street, and that owing to the death of his father he had to attend more closely to business and must give up his hunting; the horse was brought into the stable-yard and trotted up and down. Captain Heathorn remarked that it went rather stiffly and looked an old one, when the prisoner said he had hunted it the day before in Northamptonshire and that made it go a little stiff, and produced a veterinary surgeon's certificate that the horse was sound and only six years old. Believing the prisoner's statements as to his position, Captain Heathorn did not carefully examine the horse, and after some further conversation gave him a cheque for £84, and took the prisoner's receipt, which was dated 1, Gloucester-terrace, Camden-hill, Kensington, and in which the prisoner undertook to return the money and take the horse back within a month if Captain Heathorn did not approve it.

During the conversation a man dressed in the livery of a groom spoke to the prisoner, and asked what answer he was to give his lordship about the horse, and then left, saying he could see his lordship had lost the horse. This was done, as the prosecution alleged, to make it appear that other persons were anxious to buy the horse.

Captain Heathorn was cross-examined as to whether he was

really induced by the prisoner's statement about his being a banker to part with his money, and whether he had not been ready to take his money back, but he maintained that he had been so influenced, and had believed in particular that he could return the horse if it did not suit and have his money back, and he also said that, although he would have taken his money back before taking criminal proceedings, he had never entertained the idea of abandoning them if his money was repaid.

On taking the horse to his stables Captain Heathorn found that it was unsound, aged, and in no way corresponded to the description given, and tried to stop his cheque, but was too late to do so. Professor Pritchard, of the Royal Veterinary College, who had examined the horse, said it was unsound, was fourteen years old at the least, had cataract in the right eye, chronic disease in both fore fetlocks, was lame in both fore legs, and its value only about £15.

A member of the firm of Martin and Co. proved that the prisoner never had been in any way connected with or related to any member of that firm.

For the defence it was contended that the prisoner's statement about his being a banker had really had no effect in inducing Captain Heathorn to part with his money, but only in persuading him to enter into the bargain, and that these proceedings were taken rather for the purpose of enforcing compensation for a breach of warranty, for which an action should have been brought, than with a view of punishing fraud. *Mr. Edlin* summed up the case with great care to the jury, and left to them the question whether the prisoner had made the statement as to his being a member of the firm of Martin and Co. with a view to defraud Captain Heathorn, and whether Captain Heathorn had relied wholly or in part on this statement, and had been influenced by it in parting with his money. The jury returned a verdict of *guilty*. A previous conviction against the prisoner for a similar fraud in 1866 was proved, and sentence was deferred.

On February 15th Herbert Martin, the prisoner, who was convicted on Friday last of obtaining from Captain Heathorn, of the Royal Artillery, £84, the price of a horse, by falsely pretending that he was one of the firm of Martin and Co., bankers, in Lombard-street, was brought up for judgment.

Mr. Besley, for the prisoner, called attention to the fact that the previous conviction of the prisoner was in 1866, or nearly nine years ago.

The Assistant Judge, addressing the prisoner said,—You have been found guilty of this misdemeanour, and properly so, for there was abundant proof that you obtained money for a useless and diseased old horse by means of a deliberately false and fraudulent pretence. Men of your stamp are given to boast of their knavish tricks and adroitness in evading the law, and no doubt they often succeed in perpetrating bare-faced frauds of this kind with impunity. But then, so much the greater reason for punishing them severely

when they do come within the grip of the law. They must be made to know that the obtaining money by a false and fraudulent pretence is not the less an indictable offence because the pretence is made in the course of a bargain for a horse or other chattel. This is not the first time you have been convicted of a crime of this kind, and your punishment must be heavier in consequence. *You will be imprisoned and kept at hard labour for twelve calendar months.—Times.*

PARLIAMENTARY INTELLIGENCE.

HOUSE OF COMMONS, *Feb. 11th.*

CATTLE DISEASE IN IRELAND.

REPLYING to Mr. J. Barclay,

Sir H. M. Beach said—Last session, in reply to a motion made by the hon. member, I pointed out the difficulties which led the Irish Government to consider it unadvisable to extend to Ireland the compulsory slaughter for pleuro-pneumonia in force in Great Britain. We see no reason at present to alter the decision then arrived at; and I may add that inquiries which during the autumn were made by the Irish Veterinary Department into certain cases in which it was alleged that this disease had been introduced into Great Britain by Irish stock, proved that in those instances the reports were without foundation.

Mr. BARCLAY suggested that the reports referred to should be laid upon the table of the House.

OBITUARY.

WE have to record the following deaths:

Mr. James Connon, M.R.C.V.S., Kirkwall, Orkney. Diploma bears date April 26th, 1865.

Mr. John Saunders, M.R.C.V.S., *late* London. Diploma bears date December 22nd, 1836.

Mr. John Rhodes Huntriss, M.R.C.V.S., Dudley, Worcester. Diploma bears date July 2nd, 1839.

THE

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Communications and Cases.

EPIZÖOTY IN THE HORSE; MORE ESPECIALLY IN RELATION TO THE RAVAGES PRODUCED BY THE FOUR-SPINED STRONGYLE (*STRONGYLUS TETRACANTHUS*).

By T. Spencer Cobbold, M.D., F.R.S., F.L.S., Professor in the Royal Veterinary College.

The cumulative evidence that has now been brought forward in reference to parasitic outbreaks affecting horses is of such a character as to enable me to clear up many points that were previously obscure, and also at the same time to correct certain errors into which myself and others have fallen, as well as to throw additional light upon the important subject of equine parasitism which, as Youatt justly observed, has hitherto been "unpardonably neglected by veterinary practitioners."

Having, at a great disadvantage, voluntarily undertaken to give these investigations into equine parasitism a fair start, I trust some member of the veterinary profession will set himself the task of working out the subject more thoroughly and completely than I can possibly hope to do. For specimens of parasites I have already expressed my indebtedness to various practitioners, and only the want of sufficient time has prevented me from doing more justice to the interesting facts that they have been pleased to communicate.

In the pages of the *Veterinarian* for the preceding year I have given three separate communications on the entozoa of

the horse, and now, partly with the view of making a few important corrections, but more especially with the purpose of supplementing the facts already recorded, I venture to hope that a fourth paper may not prove altogether unacceptable.

When any one speaks of worms in the horse (and the same rule should hold good in the case of all other domesticated animals) it is necessary to discriminate as to the particular species of parasite referred to. It is now perfectly obvious that at least four totally distinct kinds of worms are capable of producing epizöoty or enzöoty (as I should prefer to designate these helminthiases) in the equine bearer; whilst, to mention another case in point, the same thing occurs in the sheep. What is more common than to hear people speaking of lamb disease as if it were one distinctive parasitic affection, when, in truth, there are four totally different kinds of "lamb disease," in the separate production of which five distinct species of entozoa are directly concerned?

In the nascent state of every science, besides encountering innumerable prejudices, one has to guard against a too hasty generalisation, but a far greater impediment to progress lies in the inability of the mass of mankind to recognise positive advances already made; and as to the propriety of recognising the source whence these real additions to our knowledge have been made, why, that is a duty which is too often shirked altogether.

The readers of this periodical will remember that from the data originally communicated by Mr. Rees Lloyd we have established the fact that tapeworms (*Tænia perfoliata*) and small strongyles (*Strongylus tetracanthus*) are alike capable of separately producing an endemic affection which in the case of the Welsh epizöotic has proved terribly fatal. It is also certain from evidence derived from other sources that serious and even fatal colics arise from the presence of palisade worms (*Strongylus armatus*), whilst formidable symptoms are not unfrequently set up by pin-worms (*Oxyuris curvula*), and probably also by two kinds of maw-worm (*Spiroptera megastoma* and *S. microstoma*).

As regards the pony epidemic, the account of which appears to have excited such general interest, I may further mention that on the 9th of February last I heard from Mr. Rees Lloyd that it was virtually at an end. Amongst the many additional particulars of interest Mr. Lloyd informs me that "in the affected district it has been the custom to dispose of the ponies as soon as the owners noticed anything amiss with them." In this way it appears that Mr. Lloyd

was not unfrequently called upon to treat isolated cases which had occasioned trouble to the purchasers or new owners. Mr. Lloyd adds:—

"The last case I had, was one which had been sold in this way, and which had suffered now and then from colicky pains for the space of about two months. The animal had been drenched with febrifuges, and rubbed with stimulating liniments about the throat (I presume with the notion that it was suffering from some acute pulmonary disorder). However, I was sent for one evening, about one hour before the patient's death. I soon diagnosed the case as parasitic, at the same time considered it to be a hopeless one; I remained with it the whole of the time, of which about forty-five minutes of the most acute pain was borne by the trembling beast, which was leaping, rolling, and tossing itself about with astonishing rapidity. The bulging eyes, gnashing teeth, foaming mouth, and sharp peculiar hoarseness were pitiable to behold; when suddenly, all was silent, he quietly rose to his feet, and nipped the grass as if nought had troubled him. I then trotted him quietly up a few yards of rising ground in the corner of the field, when he immediately got down to rise no more. The next day, I examined him, and found myriads of the four-spined strongyles, a large number being encysted (of which I have some good specimens)."

Mr. Rees Lloyd's account of this case is so graphic, and the facts are of such singular interest, that I have not hesitated to reproduce his own report of it without abridgment. Speaking of another patient, a mare, in the management of which he appears to have been eminently successful, he says, in effect, "she has voided thousands of these parasites, and was in a frightfully emaciated condition; but beyond a craving appetite there was little else to be noticed." Notwithstanding the few diagnostic indications afforded, Mr. Lloyd, when first called upon to examine this patient, at once successfully pointed out the true character of the disorder; and here I am glad to observe that in forming the diagnosis he adopted that simple plan which I have over and over again been careful to insist upon when lecturing to my pupils at the College. Being led by the history of the case to suspect worms, Mr. Lloyd at once examined the fœces, when, to his satisfaction, he discovered thousands of these minute nematodes. Clinically, these facts ought not to be lost sight of.

In the next place, my informant passes on to speculate on the local influences at work in the production of these

nematode epizöotics. On this subject, my views are somewhat at variance with those commonly entertained by members of the veterinary profession, for whose opinions, however, I have every respect. Thus, Mr. Lloyd remarks that those animals which are troubled with this species of strongyle are bred on the limestone formation; and he adds, "As soon as you get to the sandstone district, these worms disappear, and you then find their places occupied by the tapeworms" (*Tænia perfoliata*). Undoubtedly, as regards the Welsh epidemic, the facts are such as prove the existence of this curious distribution. Nevertheless, I am glad to observe that even Mr. Lloyd himself is quite alive to the circumstance that the peculiarity may be only the result of coincidence. On this point, he says, "I should scarcely think that the soil has any influence in the matter; but it may be worth an inquiry as to what geological formation the affected animals were grazing on. It is to be regretted that owners have not paid that attention to this epizöotic that it required; therefore, there is much lost which might have been of value; the wealthy, who have lost the greatest number of animals, taking the least trouble, yet glad to receive information at the least cost."

So far as I am aware, in all cases where death has occurred in connection with these four-spined strongyles, encysted nematodes have always been found to be present. In fact, the symptoms and the fatal result have alike arisen from inflammation produced by the minute worms lodged in the mucous membrane of the gut. Even without making microscopic examinations of the encysted parasite, several observers have at once pronounced upon these encysted worms as being young strongles; but whilst some, like Mr. Rees Lloyd himself, have correctly referred them to the four-spined species, others like Ercolani and Colin, have regarded them as the sexually immature forms of the *Strongylus armatus*. For myself, I am free to confess that one of my earlier examinations led me to suppose that these encysted worms were referable to neither one nor the other species of strongyle. In this view I have since satisfied myself that I was wrong; and such differences as I observed and described in my paper in the February number of this Journal for 1874, were partly due to accidental circumstances. This was certainly the case in the specimen which showed a slight prominence along the ventral line, and which therefore I not unnaturally presumed might be the female reproductive papilla in a rudimentary condition. In like manner the rather sharper-tailed specimens were

thought to represent sexually immature males. At all events, my so-called *Trichonema arcuata* must be abandoned as a species; all these encysted worms of whatever size being nothing more than varying stages of growth of *Strongylus tetracanthus*. In all other respects their characters were singularly uniform.

Had not my examinations been limited to a very small number of specimens, I should not have been led to propose this new title. I now conclude that all the synonyms and corresponding descriptions, adduced in connection with Trichonema, refer to sexually immature stages of growth of the four-spined strongyle. Who first indicated the true genetic relation of the parasites in question I do not know, but it was strongly insisted on by Leuckart, whilst Krabbe takes the same view. I ought perhaps to mention that—as regards the encysted worms originally sent by Mr. Lloyd, I never entertained a shadow of doubt but that they were, as I stated at the time (the *Veterinarian*, 1874, p. 404, last line), "immature forms of the same nematode species;" but when afterwards I received some parasites from Professor Williams, I did not recognise the fact that they were the same species of worm. This arose partly from the circumstance that they had lost their colour from preservation in spirit, partly because no free worms were found associated with them, and partly because there were, as Principal Williams himself pointed out, "two readily distinguishable sizes." Had there been transitional forms between these, I should probably have recognised their source and character. Again, when later on Mr. Cawthron sent me some nematodes of the same kind, I recognised the fact that they corresponded in some respects with those received from Principal Williams; but I did not even then feel sure as to their true character. Waiting for the further evidence which has fortunately since been placed before me, I remarked (*loc. cit.* p. 218) that I was "not prepared to say that these worms might not turn out to hold some genetic relation with the four-spined strongyles." At length the doubt is quite cleared up. The slight differences of structure observed in Professor Williams' specimens were not rudimentary indications of a sexual character, as I had supposed, but merely accidental markings in one case, and alterations of form, probably due to stages of growth, in others.

As already announced in the previous number of this journal (p. 186) Mr. J. A. Clarke, V.S., of March, Cambridgeshire, recently forwarded some parasites to the College, which he not unnaturally characterised as examples of my

Trichonema arcuata. As, unfortunately, I had no opportunity of examining these parasites (which nevertheless were freely distributed to the pupils) in the fresh state, I requested Mr. Clarke to supply me with a fresh batch, should opportunity offer. This request met with a ready response, and on or about the 25th of February I received a quantity of fresh worms, obtained *post-mortem* from a colt, which, as already announced (*l. c.*, p. 187), died on the 23rd of the same month. The examination of these parasites has supplied me with most of the additional facts that I required for the purposes of identification, whilst at the same time it has afforded other useful data. Not only did Mr. Clarke send me portions of the intestine that were, as in Mr. Rees Lloyd's case, literally swarming with these Trichinemes, but at the same time he sent numerous examples of the free four-spined strongyles, a goodly number of palisade worms and also two selected examples of the "half-peck of lumbricoids" all of which were obtained from the colt in question. As regards the case itself, Mr. Clarke also supplies the following particulars:—"The colt had been (he says) in a dropsical condition lately. The penis and legs were swollen to an enormous size at one time, but the continuation of vegetable and mineral tonics combined, reduced that. Not being able to stand, he had been supported in slings lately, but his appetite was good up to the last owing, no doubt, to the medicine."

Referring to the *post-mortem* Mr. Clarke adds, "I did not expect to find the *Ascaris megalocephala* as not one of my patients had passed one during the whole time of treatment; nor can I account for Prof. Williams or Mr. Rees Lloyd being more successful in treatment, unless my patients were in a too far advanced stage."

Great as is the interest attaching to such a "find" as that here described, I may observe that the presence of several varieties of parasite in any one bearer is by no means uncommon; and if the record of worm cases given in the earlier volumes of this journal be carefully looked into, several such instances will be detected. Perhaps the most remarkable of these is the one recorded by Mr. Poulton, in 1866. It was a genuine case of severe worm-colic in an aged mare, terminating fatally. Although not expressly so stated, it is quite clear that the "large quantities of tapeworms" found *post mortem* were referable to *Tænia perfoliata*, that the "myriads of small entozoa" (attached to the mucous coat of the colon and also mixed with the fæces) were referable to our now familiarly known *Strongylus tetracanthus*, and lastly that the twenty worms or thereabouts characterised as having "white

heads and tails and black bodies " must have been examples either of palisade worms (*Strongylus armatus*) or of pin-worms ; most probably the former. Of especial interest is the circumstance that Mr. Poulton found the small intestine sacculated, the sacs being filled with tapeworms. That observation corresponds precisely with the facts since recorded by M. Megnin, and tends to confirm the view entertained by Prof. Simonds and myself as to the identity of Megnin's tapeworm with the common perfoliate species.

Without further touching upon this and other interesting problems suggested by Mr. Clarke's "find," I am now especially concerned to state what is the probable course of development undergone by our *Strongylus tetracanthus*. In the solution of this question lies the secret which should guide our sanitary conduct, not only in view of recommending steps that would lessen the chances of invasion from this parasite, but also infection from several other allied forms of entozoa. The several 'finds' by Principal Williams, Mr. Rees Lloyd, Mr. Cawthron and Mr. Clarke have all helped to throw light upon the subject in one direction or other ; and it is only by comparing the facts observed in these and similar cases that any further positive advances can be made. What number of such like records may have appeared in foreign journals devoted to veterinary science I have no means of knowing ; but since neither Krabbe nor Leuckart appears to have associated the presence of these worms with any enzöoty or special helminthiasis, I am led to conclude that cases of this sort cannot be very common on the Continent. The statements of Friedberger, indeed (to whose admirable clinical lectures on colic I have lately been calling the attention of the veterinary profession), almost imply as much. Thus, the Munich professor says that the presence of worms in the intestinal canal is only or chiefly rendered apparent when the parasites exist in such masses or numbers as to block up the passage of intestinal canal. In particular, he instances the the *Ascaris megalocephala*, which in individual cases often occurs in astonishing numbers, thereby producing colic. But what has interested me most is the circumstance that Friedberger in a paragraph immediately following, and placed in brackets, observes that he has witnessed a case in which violent excitement and diarrhœa resulted in a fatal issue, the cause being referred to the presence in the cæcum and colon of numberless free examples of *Sclerostomum tetracanthum*.

Clearly, our parasite cannot be regarded on the Continent as a very frequent cause of epizöoty when such a case is referred to as rather a novelty than otherwise. Again,

Dr. Krabbe makes no mention of the helminthiasis set up by the four-spined strongyle; but he points out that the young occupy the mucous membrane, in which situation they lie coiled, so as to present to the naked eye the appearance of little dark spots (*Husdyrenes Indvoldsorme*, 1872, p. 17, *Aftryk. af Tidsskr. for Vet.*)

Once more, Professor Leuckart's account of the microscopic appearances presented in the case brought under his notice is so instructive, that I shall reproduce it in its entirety. He writes as follows:—"I have hitherto had only a single opportunity of examining the strongyle capsules in the intestinal membrane of the horse. Their presence is limited to the cæcum and colon, but they are so abundant in this situation that their numbers may be estimated by many hundreds. It was thus likewise in the case in question, the investigation of which by myself was rendered possible through the friendlinesss of Professor Haubner, of Dresden. The capsules were of oval form, and glimmered through the mucous membrane as opaque spots, mostly from one to three millimetres in size. In several of these capsules (which possibly, like the *Ascaris capsularis* of fishes and frogs, have originated from altered gland coverings) nothing was found beyond a greasy mass of a brownish colour, which readily might be taken for a tuberculous substance; but the greater number of them contained a coiled worm, from three to six millimetres long, their breadth being 0·15 to 0·26 m.m. (which is $\frac{1}{166}$ to $\frac{1}{99}$ of an inch). They exhibited a highly coloured stout intestine, and a thick-walled oral capsule, of 0·022 mm. in depth and 0·025 in breadth. On the dorsal side two three-cornered chitinous lamellæ arise from the shallow floor of the small oral capsule. The cuticle, notwithstanding its firm structure, was still destitute of annulations. The tail (0·15 to 0·18 mm. in length) was strongly marked off from the rest of the body, being of a slender cylindrical form, with a rounded-off extremity. The development of the sexual apparatus had not yet commenced. Throughout the great differences of size presented by the body, the structure of all examples was exactly the same to the minutest particular, without exception. Also the smallest specimens, which scarcely measured one millimetre, found in capsules of 0·3 m.m. in diameter, were distinguishable only by the absence of the oral cup, whose position was represented by a slender and thickened chitinous cylinder, as obtains in the earliest parasitic juvenile condition of *Dochmius trigonocephalus*. The transformation to the form presenting an oral cup occurs through a moulting, which is

accomplished already in examples of 1·5 m.m. in diameter. Later, also, the worms cast their skins in their capsules without, however, changing the oral cup. "In regard to the final purpose of this metamorphosis, my investigations have left me entirely in the lurch; nevertheless, I do not entertain the smallest doubt that the worms which I have here described are the larval form of *Strongylus tetracanthus*." (*Die Menschlichen Parasiten*, Bd. II, S. 445, et seq.).

Professor Leuckart, in a subsequent passage, refers to the errors of Colin and Ercolani, remarking that Schneider had already corrected them in the particular already mentioned (p. 240). There is certainly no great blame attaching itself to an error of interpretation; and I am glad to be able now, once for all, to set the matter right, as regards Professor Williams's specimens, which I did not originally recognise as being essentially the same as those sent to me by Mr. Rees Lloyd. The evidence as to the frequency and destructiveness of this little worm in England is now quite overwhelming, and even whilst writing the above remarks I have received yet another set of specimens. These have been forwarded to me by Mr. John Gerrard, of Market Deeping, Lincolnshire; who also, in a letter dated the 3rd of March, states that they were obtained from the intestinal canal of a two-year old colt, which died from the effects produced by them." I further learn from Mr. Gerrard that, of five animals suffering from the disease, two had died; the history of the cases being similar to those given by Mr. Clarke, in the previous pages of the *Veterinarian*. In regard to the specimens (which were not placed in my hands before the 9th of March), I need only say that they are characteristic examples of the *Strongylus tetra canthus;* along with which (although Mr. Gerrard does not make any allusion to them) there are likewise several examples of *Strongylus armatus*. Obviously, our experiences testify to the fact that these two parasites are usually associated in one and the same bearer.

If it be asked, "What is the course of development pursued by this entozoon?" the reply is that all the stages have not at present been accurately traced. Nevertheless, from the facts already observed in allied species, coupled with the data recently supplied by ourselves, I think we are now in a position to form a tolerably correct notion of the life-cycle pursued by *Str. tetracanthus*. Only those who have long worked at these subjects can adequately realise the nature of the strange variations of habit displayed by the various species of nematode entozoa. Mr. Gerrard, indeed, expresses

his opinion that the ova circulate in the blood, but for the support of this view there is no foundation in the facts hitherto observed.

The real questions at issue cannot be solved without the possession of a much more profound knowledge of the usual genetic processes and migrations of strongyloids than most people possess. Moreover, any attempt on my part to explain the matter in an off-hand manner, and therefore in a few words, would of necessity convey little more actual knowledge than that which the merest guessmaker might believe himself to possess. For these reasons, and partly on account of the time and literary space required, I must leave the further elucidation of this subject to a future occasion.

"CONTRIBUTIONS TO VETERINARY MEDICINE AND SURGERY.—ON SOME OF THE DISEASES OF HORSES NOT FULLY DESCRIBED BY AUTHORS."

By D. McEachran, M.R.C.V.S. & V.S. Edin., Principal of the Montreal Veterinary College.

Furunculus in Horses' Heels.

Furuncular inflammatiou of the pastern and coronet of the horse is of very frequent occurrence in all parts of North America, which are covered during the winter months with snow, and more particularly in large cities. This disease has never been described by any of our authors with any degree of minuteness, so far as I am aware.

Professor Williams in his excellent work 'The Principles and Practice of Veterinary Medicine and Surgery,' under the title of "Carbuncle of the Coronary Band," says, "this disease is hitherto undescribed by any English author; but I know several veterinary surgeons who have met with it as well as myself."

It is known among stablemen as "mud scald," owing to its occurring during the muddy season, and the name for practical purposes is not altogether inappropriate, although it indicates ignorance of the true nature of the disease.

Furunculus may be described as "a circumscribed inflammation of the skin, having its seat in the deeper or areolar layer of the corium and the cellular tissue filling the interspaces of its network," usually sudden in its development, rapid in its progress,

and accompanied by intense pain and high fever, resulting in the formation of a plug or core of material resembling false membrane, which after imperfect suppuration sloughs out, as does also the skin covering the tumour. It occurs commonly in the hollow of the pastern, and may confine itself to that part; or, on the other hand, it may spread around the coronet with amazing rapidity, and in many cases genuine anthrax of the pastern and fetlock takes place, and speedily results in destruction of tissue so extensive as to frustrate all hopes of recovery.

In many cases, however, after the separation of the core and dead tissues, the sore assumes, a healthy character, and with a little attention soon heals by granulations. In some seasons it appears as an epizöotic, and almost all cases of cracked heels or wounds of the coronet assume the furunculoid form; it is also to be observed that during such seasons wounds are difficult to heal, and often become erysipelatous.

It is dependent on a peculiar cachexia or a disordered state of the blood predisposing the animal to diseases of this class, and is developed by the repeated irritation occasioned by the action of mud and snow water on the part, especially when the legs are imperfectly dried. It is invariably ascribed by stablemen to scalding by the mud, but many cases of true furunculus have come under my notice arising from wounds from nails. Quittor is often seen to assume this form during the prevalence of the disease, so that although the irritation caused by mud is the most common agent in its development, we are forced to conclude it is not dependent on local irritation alone, but also on a peculiar condition of the system, the exact nature of which is unknown.

At this season of the year the skin and subcutaneous tissues are in a state of great activity; the thick heavy winter coat is being removed, and the new coat being formed, which process requires a more active circulation; doubtless, too, at this time the sebaceous glands and absorbent vessels are called upon to perform extra functions, and there is also an accumulation of impurities in the system, caused by the diminished cutaneous perspiration consequent on the coldness of our climate during the winter months. Is it not possible that the depurative efforts of the dermal structures render the structure more liable to disease, and the presence in the system of *materies morbi* determines the malignant nature of the disease?

Furunculus occurs commonly in large cities but is also met with in the country. If we examine the nature of the mud covering the streets of cities, we shall not be surprised that when mixed with snow water it becomes irritating to a structure so sensitive as that covering the pasterns of horses. Take, for instance, the streets of Montreal, which are Macadamised with limestone,

which powders down to a fine dust, this being mixed with a large quantity of feculent matter, the accumulations of the winter, besides the various refuse substances, ashes, chemicals, &c., accidentally or purposely scattered over them; when the snow melts in spring it produces a muddy compound of a very caustic nature, which if left, as it often is, to dry and stick to the legs, burns or scalds the heels, and either produces aggravated cracked heels or furuncular inflammation.

Symptoms.—Furunculus generally appears suddenly; a horse on being attended to in the morning is found very lame, suffering intense pain, often covered with perspiration; if made to move, which he does most unwillingly, he jerks his leg up in agony and nearly falls. In hardly any other disease is so much pain evinced.

On examining the leg a hard swelling of a painful inflammatory character is found in the hollow of the pastern, which feels hard and circumscribed at first, but speedily spreads and extends into the deeper structures. The skin is livid and vesicular, often of apurple or blackish colour; the pulse and temperature are high; and the breathing quick; the horse feeds but little and is inclined to lie down a good deal.

The progress of the disease is marked by the swelling becoming softer, by imperfect suppuration, and the separation of a peculiar yellowish white product, or, more correctly speaking, exudate, which is called a core or plug. This core is formed in the deeper structures of the corium, and becomes surrounded by a jelly-like substance which isolates it from the tissues. By some this core is said to "consist of dead areolar tissue," but in reality it is a product of the inflammation, an exudate in fact, which is formed as the first step in the inflammatory process, and constitutes the small hard tense swelling felt at the commencement; in the second stage it becomes separated and is sloughed out, as is also the gangrenous skin and part of the surrounding tissues, leaving an open sore more or less extensive, often exposing the tendons or even the articulations themselves.

In favorable cases the separation of this slough marks the commencement of the healing process, and under proper treatment the sore becomes clean, healthy granulations begin to fill up the opening, and in a few weeks the wound will be healed up, and the animal will return to work. Under certain conditions of the system, however, the disease assumes a more aggravated form, extending in all directions, and assumes the character of malignant anthrax. In anthrax, instead of having only one core as in furuncle, we have an imperfectly formed plug for each bleb or boil—of which we have a succession extending upward, malignant and gangrenous, penetrating deeply into the tissues, with sordid

cores below, attended with extensive destruction of tissue and great depression of the vital powers. No matter what treatment is resorted to, a healthy reaction cannot be established, and the case becomes hopeless.

Treatment.—In furunculus prophylactic measures will prove more satisfactory than therapeutics. High condition should be avoided, especially as spring approaches; by high condition I do not mean fat condition (for I have found this disease equally common in those "high in bone and low in flesh," with those "rolling in fat"). I mean the condition induced by feeding on heating or stimulating food. Interdict the use of the trimming shears to the horse's legs; nothing will protect the skin from irritants so well as what nature provided for the purpose. Forbid also the use of the hose to shower the legs of working horses, for the simple reason that they are more predisposed to diseases of this nature, and the legs are seldom dried properly after the washing. In the case of the fine-bred saddle or carriage horse on the floor of a comfortable stable, with tepid water and a soft sponge, and a careful groom to dry the legs properly, there is no objection to washing the mud off; but where, as I have often seen, a poor horse, after working hard all day, on arriving at his stable standing in the cold wind at almost a freezing temperature, has the hose turned on to his legs and belly while he shivers in the cold, and is then turned into his stall and left to become dry; need we wonder if the reaction and evaporation produce disease such as that now under consideration.

In passing I would remark that the drying of a horse's legs is a subject on which grooms display as a rule but little common sense; how often do we see, even in the best stables, a powerful man either with a rough straw or hayband or rough towel thrown round the pastern, with an end in each hand, sawing with all his might, as if the delicate sensitive skin of the pastern was a rough block of wood which he wanted to polish.

I have invariably found that the best plan during the cold spring or autumn weather is to have the horse on the floor of the stable, and with a wooden scraper remove as much as possible of the mud, and with a straw wisp gently dry the legs; in a short time what remains becomes dry, and will brush out with a dandriff brush. The hoofs only should be washed and picked out.

Under the best management, however, cases of furunculus will occur, and require close attention on the part of the practitioner.

The shoes being removed, immerse the foot in a bucket of hot water with carbolic acid, and continue to foment for about fifteen minutes, then apply a soft linseed-meal poultice, over which linseed oil and carbolic acid (one to thirty) has been poured. Give a mild purgative, order soft food, and a good bed. Ad-

minister four times daily an ounce of sodæ sulph. in solution with from fifteen to twenty drops of tincture of aconite. Repeat the poultices every three or four hours.

As soon as the swelling softens it should be freely opened and the diseased tissues, as far as possible, removed; then freely touch the surface with nitrate of silver or even the actual cautery, and circumscribe the disease by cauterizing the skin surrounding the diseased part. Frequent dressings with carbolic acid and oil, and the judicious use of the caustic, to induce healthy reaction and also to regulate granulation, will generally be found efficacious in the milder forms of the disease. Continued rest is essential; as, owing to the situation of the sore, it is liable to be opened at every step.

In the more malignant form of furunculus I have found most benefit from injections of strong watery solutions of sulphate of copper. Poultices have a tendency to increase the spreading of the disease, and consequently do harm; but the frequent fomentations with solution of carbolic acid are necessary to prevent the irritation of the gangrenous discharge on the adjoining tissues. In this stage, too, oatmeal gruel, linseed tea, and nourishing drinks are necessary, and three-ounce doses of Liquor ammon. acet. should be given three times a day.

When the surface of the surrounding skin becomes vesicular or erysipelatous, tincture of iodine frequently painted on will be useful, and the diseased part may be circumscribed by the caustic to prevent its spreading. These cases require close attention, and the exercise of great discretion as to what is best in the condition in which the disease is found.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 178.)

The next Rosal order to be considered is that of the *Pomaceæ* or *Appleworts*, of which the following is the—

Diagnosis.—*Rosal exogens, with polypetalous regular flowers, and carpels adhering to the calyx by the back.*

The Pomaceæ.—As so circumscribed, is but a small order, consisting of only about sixteen genera, but numbering as many as two hundred species. But the extent of the cultivation of some of the species, notably those of the apple and pear, may be estimated by the fact that of these there are many hundreds of sorts of both already in existence, and each year their numbers are being greatly added to. Some notion

of the extent to which the varieties of the apple has obtained may be gained from the fact that Mr. Robert Hogg, in his work on 'The Apple and its Varieties,' published in 1859, has actually described no less than 942 "varieties," as the title states, "of apples cultivated in the gardens and orchards of Great Britain," and these are only a small part of those of other countries, to say nothing of the fact that each state in America and every county of England has peculiar sorts, and this list is continually being added to. Well, then, may the author just quoted, speak in high terms of commendation of the apple; he says—

"There is no fruit, in temperate climates, so universally esteemed and so extensively cultivated, nor is there any which is so closely identified with the social habits of the human species, as the apple. Apart from the many domestic purposes to which it is applicable, the facility of its cultivation and its adaptation to almost every latitude have rendered it, in all ages, an object of special attention and regard. There is no part of our island where one or other of its numerous varieties is not cultivated, and few localities where the finest cannot be brought to perfection."*

The pear, again, is equally widely known and appreciated, and we find that so long ago as 1831 Mr. George Lindley, in his 'Guide to the Orchard and Kitchen Garden, described no less than 162 varieties, and these it may be safely asserted, have been nearly, if not quite, doubled since that time.

Both apples and pears are supposed to have been introduced to Great Britain by the Romans, and we have before us the copy of a figure of Pomona which formed one of the Seasons in a Roman pavement which we disentombed at Cirencester, the ancient *Corinium*, in which a wreath encircles the finely shaped head, composed of highly coloured apples and pears.

Both the apple and pear trees are said to be wild natives of Britain, but it is, perhaps, doubtful whether they have not come from the cultivated forms, the seeds of which have a tendency to revert to their wild original.

Both apples and crabs belong to the genus Pyrus, as does also the Wild Service and the Sorbs; we may, then, refer to them under the following heads:—

1. *Pyrus malus*. Crab. Fruit rounded; leaves obovate.
2. *Pyrus communis*: Pear-tree. Fruit pear-shaped; leaves simple, much as the former.

* 'British Pomology,' p. 1.

3. *Pyrus Aria.* Whitebeam or Sorb. Leaves more or less deeply lobed.
4. *Pyrus torminalis.* Ditto.
5. *Pyrus aucuparia,* Rowan tree or Mountain Ash. Leaves pinnate ; fruit small, rounded.
6. *Pyrus domestica.* True Service tree. Leaves pinnate ; fruit pyriform or pear shaped.

These six species of the genus Pyrus will now be referred to in the order in which they are tabulated.

1. *The Apple,* in its wild state, produces the fruit known as the crab, the juice of which is so austere that a bad-tempered man or woman is often referred to as a crabbed person.

The expressed juice of the fruit is known under the name of verjuice or crab vinegar, a fluid much more highly esteemed in country practice, both for man and the lower animals,than ordinary malt vinegar,which latter by Professor Tuson is described as—

"Refrigerant to allay febrile heat; styptic, astringent, and diuretic; also lithonlytic for calculi and urinary deposits consisting of calcium or magnesium phosphate or carbonate. Likewise, employed as an antidote to poisoning by the alkalies and their carbonates. Very seldom used, however,internally."*

The cultivated apples are used in three forms, namely, the finer-flavoured and best-keeping varieties are favorite dessert fruits, whilst another series finds favour for cooking purposes, and it is astonishing into how many forms of tarts, puddings, sauces, and the like, this fruit enters. Indeed, a book is published upon one hundred ways of cooking apples.

The great mass of this fruit is employed in making the beverage known as cyder, for which the counties of Devon, Somerset, Worcester, Gloster, and parts of Dorset, are celebrated. It is sometimes a rough sub-acid drink, with, however, enough alcohol to cause intoxication, and doubtless it is on this account that it finds so much favour with the rustic population. Whole "orchards" are devoted to the cultivation of cyder fruit, and as men will sometimes do more for extra cyder than for money, it follows that, after all, this drink forms part of the payment of wages in kind, a system which we hope some day to see abolished, but we fear that such is the liking for cyder and the satisfaction in slaking the thirst which it engenders with a fresh draught,

* 'Veterinary Pharmacopœia,' p. 2.

that its too free indulgence will not be foregone until some legislative enactment be instituted against it.

We shall not here dwell upon the disturbances caused by the eating of a single apple, but yet we cannot forbear to notice the following:

Under the head of antipathies and fears in the Percy anecdotes we find the following:—

"An apple is delicious, and yet there was a whole family in Aquitaine, called the Fœsii, who had such an hereditary dislike to this fruit, that they would never see an apple without their noses falling a bleeding."

In former times the apple was used in many superstitious rites, but at present there is no greater difficulty connected with this fruit than that connected with the mode of its introduction into an apple dumpling.

2. The Pear, like the apple, is much used for the dessert and for cooking, and in Gloucester, Worcester, and Hereford its expressed juice is used for making a favourite drink called "Perry." About Devon and Dorset this is not esteemed as a drink, but from our own experience in Gloucester and Worcester, we should say that perry is a more luscious drink than cyder. It bottles well, and some of the sorts of pears well gathered and pressed really make a drink not inferior to some of the foreign effervescing wines.

3, and 4. *The Whitebeam and Sorb tree* are known to our woods and hedge-rows, especially upon the rocks of the oolitic and mountain limestones. They are exceedingly ornamental trees, and their small rounded fruits are sometimes employed in making preserves, but they are usually too harsh to be used in this way to any great extent.

The Rowan or *Mountain Ash* is so well known as an ornamental tree in our woods and shrubberies that it scarcely needs any lengthened description. Both this and the following are interesting for their highly compounded and perfectly pinnate leaves. The initiation of this departure from the simple more or less deeply divided leaves of the Sorbs is sometimes seen in the almost pinnate leaves to which the sometimes deep divisions of the variety of *Pyrus aria B. pinnatifida* in which the leaves are described by Sir W. Hooker to be "pinnatified and even pinnated."

The Mountain Ash or Rowan is as celebrated as the ash-tree itself in its powers of enchantment:—

> "Rowan tree and red thread
> Keep the witches at their speed;"

and on this account it is often planted about most of the houses and villages of the Highlands to protect them from evil spirits."

The berries are sometimes eaten, but are too austere for any useful purpose, but yet many frugivorous birds feed upon them greedily.

The Wild Service Tree has been admitted to our flora upon the faith of a single specimen once existing in Wyre Forest, near Bewdley, Worcestershire. It possesses pinnate leaves, and a larger and more pear-shaped fruit than the former. It is a common tree on the Continent, and is often met with in collections of fruit trees in this country; thus some specimens are reported at the Oxford Botanic Garden, and we have received fruits grown at Eshur, through the kindness of Mr. Foster, of that place.

Our only wild (?) specimen has now been destroyed for some years—it having been burned by some mischievous boys who made a fire at its base in the midst of the Forest. It is a curious and interesting plant, of which we hope to present an engraving in our next, as containing some valuable information upon the pome fruits in general, the growth and properties of which will occupy our attention in a future article.

CONTAGIO-INFECTIOUS PLEURO-PNEUMONIA.

By William Alleyne Cox, M.R.C.V.S., Dublin.

For the sake of description the terms *fomes* and *spores* must be considered as having a separate and distinct meaning; they may thus be defined. Fomes may be applied to all matter that acts as a carrier of disease, and is composed of minute particles of both organic and inorganic material, and to which the virus clings, or which becomes imbued with it. When speaking of *spores*, we understand minute organisms developed and thrown off by the malady, and possessing innately the property of fecundity.

In pleuro-pneumonia the action both of the spores and fomes is alike, to a considerable extent, always so when taken into the system by the usual channel of infection, *i. e.*, by the respiratory system, by either inspiring the air from a diseased animal, or that contaminated by the admixture of spores generated at such a source.

In this manner the *virus* is introduced into the lung-cells; coming in immediate contact with the fine sensitive membrane, it acts firstly as an irritant; if the "economy" is good, and the subject of healthy and vigorous habit, it is frequently thrown off; if, on the other hand, the system is out of gear, no matter from what cause, the disease is developed, the

irritation increases, and the capillaries become excited; there is an increased secretion of mucus or spume, the entire lung becomes disturbed, the absorbents are stimulated to relieve it, and the *virus* is more quickly taken into the system, whilst they are in this abnormal condition, and it is by them carried into and united with the blood.

Without doubt many of the spores remain within the lung-cells, some inoperative, except as a pure local irritant, and some adhering to the cell walls, and in that position elaborating and developing themselves. It cannot be questioned that the *hyperplasia* is due to a twofold cause, both to the multiplication of the spores left within the cells, and to the deposit of those elaborated and formed in the blood.

The difference in the duration of the incubative period so often noted is explicable by the facts that those animals that have been subject to the influence of the disease for a long period, without becoming affected by it, have either thrown it off *conatu naturæ*, for a time, or that a *few* of the spores were taken into the system prior to their destruction or removal. In such a case the hypertrophy is the result solely of the exudate into the cells. In some instances the morbid material is small in quantity, or deficient in its ordinary reproductive power, and as a natural sequence, the malady is longer in making its appearance. In most cases, almost immediately after the introduction of the *spores*, a change takes place in them; they become endowed with greater vitality; they are, as it were, in an intermediate condition, between the molecule and the cell, and their multiple power is now so greatly increased that in a short space of time, often only a few days, the entire cell structure of the lungs is blocked up, the duration of time that this process takes, depending upon the vigour and quantity of virus introduced, and upon the susceptibility or cachexia of the animal subjected to its influence. The apparent paradox that the strongest and healthier soonest succumb is explainable. In the cases just previously spoken of the blood is entirely loaded with the morbid material, and when an irruption, so to speak, takes place, it is so extensive and rapid that the cells are filled, often in a few days. Unlike many visceral affections in the early stage, unless the disease be of the most acute character, there are very few indications of pain or of constitutional disturbance; and in strong phlegmatic animals the disease has, in many cases, made considerable progress ere it was detected by the herdsmen. This shows the advisability of veterinary inspection of *suspected* herds.

But, *revenon nous à nos montous*, the spores when in

the system, as before stated, are endowed with greater activity, their multiple power increased, and their character changed; they are become the parents or origin of other spores, and are now called bacteridiæ.

One peculiarity of this malady is that it is not transmittable except under conditions hereafter spoken of, neither the secretions nor excretions producing it. The saliva, the mucous secretion of the nostrils, that of the respiratory system when coughed up, even the masses of fibrin, moulded in the lesser bronchia, and found when animals are recovering from the advauced stage, are innocuous. This is probably due to the destruction of the activity of the *spores* by their being prematurely detached in the act of coughing, or to their death as morbid agents by being loose in a considerable bulk of fluid. To be capable of propagation they must be elaborated and thrown off "fully ripened" like their analogues of the vegetable kingdom.

The power by which they are expelled when in this condition is the act of expiration.

On the other hand, it may be that the only spores capable of reproducing the disease are those thrown out by the blood into the cells, and it should be borne in mind that, until the malady has actually declared itself, these are not found.

That there is some very close connection in the infective power between the spores and the method of their generation and expulsion is evidenced by the fact that neither saliva, mucus, or blood will propagate the malady.

When the disease has advanced considerably, and the lung structure has become hepatized or solid, hectic or debilitative fever ensues; at this period the "contagium" is thrown off, both in the ordinary manner, *i. e.*, by the respiratory system, and by the excretions and secretions, and by the skin. The latter is evidenced by a very perceptible odour, and this may be traced to its source by rubbing the hand on the body; the peculiar smell can be easier recognised than described.

There are many interesting facts in connection with the pathology of this malady that remain to be elucidated, but these will be taken cognizance of as we proceed.

The Causes.—After years of experience there is still a contrariety of opinion amongst us; the majority hold that the disease is contagious, but there are some who sneer at the idea. They wish to be satisfied upon various points, and it will be necessary to examine them.

First. The apparent immunity enjoyed by some animals

from disease, even when continuously and for a long period herded with those that are affected. This has been partly answered when speaking of the properties requisite for the *spores* to possess, to become disseminating agents.

I candidly confess that this disease is peculiar and eccentric in its attacks. I have known numerous instances where herds have been exposed to infection, and many animals have altogether escaped.

In other cases animals have been turned to pasture, and the disease has in a measure ceased, only few and isolated cases occurring. At this period fresh animals were purchased and from herds known to be healthy; they, the entire herd, were kept away from the sheds in which diseased animals had been located; these places were wall-scraped, cleaned, and lime-washed. At the usual "tying-up" season, the autumn, the cattle were brought into them, and in a very short time the disease reappeared, and not unfrequently amongst the recently purchased animals, many of those that had been in actual contact with those diseased still remaining healthy.

It does not of necessity follow that those that have been nearest to affected animals are the next attacked; the disease seems to pass from one end of a long shed to the other, the intervening animals escaping for a time, or altogether. That this immunity is, in some cases, only apparent, I am convinced. I have been closely observant in these matters for a number of years, and have known animals amongst herds where the disease was existent, to be "fed off" and slaughtered, and without having shown any trace of disease or sign of sickness, although they had been closely watched both by the owner and his herdsman, and on opening the thorax there was palpable evidence that the disease *had existed*, portions of lung being found impervious, considerably less in size, and, as the butcher would remark, "like old leather." This is not a solitary case, but one of frequent occurrence.

Second. The erratic course the disease takes by passing over farmsteads immediately adjoining infected places, and visiting others at a considerable distance. This is very often observed. It has been before advanced that this is an infectious as well as a contagious disease. It is not carried, as in foot-and-mouth disease, by the saliva, or by the excrementative matter, until the disease has attained an advanced stage; but the air surrounding affected animals is charged with the *spores* of disease, or the *fomes* are loaded or impregnated with it. These "malaria volumes" are carried by air currents to various localities, according to their direction

and density. Before being carried away, they attain a considerable altitude, and the consequence is that those in closest proximity so often escape.

The activity of many of the *spores* is destroyed and the fomes cleared of disease during their transit; by the vicissitudes to which they are exposed, excessive moisture, heat, cold, the violence of the current, or the altitude to which they attain, or the length of time they are kept in the upper regions, may one or all so reduce their power as to render them inoperative. It is truly a wise disposition that this occurs. Were it otherwise, we should find that there is contagium enough given off from a single animal to infect the entire stock of the United Kingdom.

It is impossible to judge with any accuracy of the amount of exposure requisite to destroy the vitality of the virus. In some cases which come under our notice the spores must have existed for months, but these were in positions favorable for a preservation of their vigour.

The malaria clouds, mentioned as being suspended in the air, are forced by the density of the surrounding atmosphere to the ground when—if retaining their power—they affect the animals with which they come in contact. There is no odour perceptible to human beings in these clouds, but it is questionable whether animals have not been able to detect it, as instances are known where, prior to outbreaks of infectious and contagious disease, they have been seen in a state of great and unusual excitement, bellowing, elevating their noses, and blowing in the air.

A series of experiments have been recently performed with the intention of proving the contagious or infectious nature of the disease. These were noted in an editorial article of the *Veterinarian* for the month of October, 1874. They were reviewed and most ably dealt with by Mr. G. Fleming, in the December number of that journal. For the connection of this subject it will be necessary for me to encroach upon the ground so recently occupied, and it will be seen by illustration how forcible were some of the arguments he used. The experiments consisted in exposing, first, an animal to the inhalation of the vapour of diseased lungs until decomposition had set in. At the end of ten weeks the animal exhibited no symptoms of disease. In this case opening the thorax and removing the lungs would throw off all the spores capable of producing the disease. For the purpose for which it was used a piece of muscular tissue would have been quite as serviceable.

It is a fact that has often come under observation that,

when dead, diseased animals are not capable of infecting others, and the spores, loose or loosened at the time of death, are either destroyed by being in contact with the dead tissue or are quickly set free, often by removing the carcase, and the development has ceased *in articulo mortis*.

In another case the animal had a piece of sponge that had been saturated with the breath and mucus of an infected beast placed in its nostrils and kept in that position for a short time. The spores are so light and volatile that they become easily entangled, and probably would not be able to again free themselves, except to mingle with the mucous secretion, and so to be inoperative. *To produce the disease they must be perfectly clear, impinging directly and at once upon the mucous surface of the air cell.*

In two other cases fluid taken from diseased lungs was injected into the system without any specific action. The action of the spores, as before said, is as an irritant, and this irritant *determines* the disease.

Inoculation may be of protective value without producing the characteristic symptoms of disease in the lungs. Were this necessary to prove its value, the remedy would be as bad or even worse than the disease. This matter cannot be definitely settled until animals so experimented upon have been *thoroughly* exposed to the influence of the disease, and these experiments would be very costly and extend over a lengthy period.

Two other animals had the "exudation" injected, in one case into the lung and in the other into the trachea, and, as might be expected, simple disease of the lungs having no characteristics of pleuro-pneumonia was produced.

Experiments are often unsatisfactory except when performed on a large scale. With the exception of the two heifer calves, the period of observation after the introduction of the *virus* was too short, and I think, for reasons before mentioned, it could not be imagined that they would become affected.

Sheep, as I have before stated, are innocuous.

If animals were taken from herds known to be free from disease and placed with those that were affected, we should soon be convinced of its infectious nature. Even the bitterest opponents of this theory would refuse to place animals at our disposal for such a purpose.

After the foregoing statement I think it may be safely held *that the principal cause is contagion or infection.*

Some so forcibly advocate this as to say that, were contagious diseases—especially the one under consideration—once extirpated, the country would remain free except by intro-

duction of disease in imported animals. This statement requires modifying. Such maladies are said to originate from certain districts, and to these has been given the name of "disease centres." The question occurs to us, What were the original conditions which gave rise to them, and may not such occur in our own country? It is known that "disease centres" are more extensive and wider spread than they were formerly thought to be. Without doubt there are districts, as in the case in our own country, more favorable for the origin and development of such maladies than others. There is another fact that bears upon this point. These affections follow in the tracts of large armies, and are in these cases produced by fatigue, excitement, improper food, exposure, and crowding together. May not such irregularities in their management produce it in our own stock without the aid of the contagium? It has not been discovered that any peculiarity in the breed affect the susceptability, although those with a weakened system, especially by excessive lactation, are most prone to it. Animals suffering from prior organic disease are more liable than healthy ones. I have heard it argued more than once that an animal suffering from tuberculosis of lungs could not be affected with this malady. I have proved that this is incorrect, and I believe then to be *most* susceptible.

But to return. It is a matter of the utmost moment to know whether the disease is ever *spontaneously* developed. Doubtless it has remained amongst us until it has become indigenous. The adventitious causes before spoken of as acting so injuriously upon the reserve food supplies of armies may come into operation. We may have an introduction of spores given off by decomposing vegetable or animal matter, and their reception and change in the system. This may be considered the refinement of an idea, but I would ask how it is that simple colds become fever, simple fever malignant, and of a most infectious nature, and often enough without such patients having been in contact with the contagious disease developed within them, unless the simple spore makes a considerable and at present unknown change? I believe that such a course not unfrequently takes place in this disease, and that there are cases of spontaneous development. I have known an outbreak to occur in herds where no fresh animals have been introduced for more than two years, or even a longer period, nor have they been in contact with other herds, or depastured near any roads. This will be met by my own statement with respect to the "malaria clouds," but utmost inquiry has

failed to show that the disease was within many miles of the locality. There are some districts in England that may be said to be scarcely ever free from this malady, outbreaks occurring at various intervals.

I have repeatedly used the terms contagion and infection; they are not synonymous, but have each a definite meaning. By contagion we suppose the spread of disease by actual contact of animals or cohabitation. It has been argued that the introduction of spores into the system is actual contact with the disease. This is acknowledged, but it is not actual contact with the animal, and the retention of both terms most clearly indicates the means by which the disease is produced. *Infection* is intended to suggest the spread of the malady to animals at a distance by atmospheric agency. It cannnot be distinctly affirmed that spores are given off, even in the advanced stage, by the excretions or secretions, that will commingle with the air, but at this state it is best to avoid carrying the morbid ordure on the clothes, boots, &c.

Before leaving this part of our subject, we ought to advert to the theory that was formerly maintained, that these maladies were due to electrical, cometary, or volcanic influence. Hippocrates held that these visitations were due to a hidden constitution af atmosphere, and within the last few years it has been demonstrated that there are myriads of particles floating in it, the true nature of which has yet to be discovered.

Dr. Alexander Hamilton Howe, in his appendix to his work, 'Epidemic Disease,' attributes contagious or infectious maladies to sol-lunar influence, which, he maintains, affects the elasticity, expansibility, or tenuity of the atmosphere, and he further holds that, as a physical agent, the air is introduced into the blood, as its aid, as a counterpoise to the contractility of the arteries; consequently any alteration in its quality will superinduce great congestion, accompanied by other phenomena, indicating a disturbance in the balance of circulation or the relation between the arteries and their contents.

He states that "influence exercised by the moon on the earth's atmosphere will extend as far as thirty degrees beyond her own actual declination, that is to say, to sixty degrees north and south of the equator, and these may be styled "the epidemic limits," and that such influence "will operate most powerfully within a space of the earth surface, comprised between thirty degrees north and thirty degrees south of the equator.

A perusal of this work will repay any one wishing to investigate the subject.

(*To be continued.*)

[We deem it necessary to state that the *spores* to which Mr. Cox refers have never been demonstrated. His account, therefore, of their development, changes, and influence in the animal economy is purely imaginary.—ED.]

Pathological Contributions.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of February, 1875, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign Ports from which brought.	Ports in Great Britain to which brought.	Disease.	Number of Animals affected.					Disposal
			Cattle.	Sheep.	Goats.	Swine	Total.	Slaughtered at place of landing.
Antwerp .	Harwich	Foot-and-Mouth .	...	6	...	...	6	6
„	London.	„	467	17	...	...	484	484
„	„	Sheep Scab .	...	10	...	...	10	10
Boulogne.	„	Foot-and-Mouth	312	...	...	11	323	323
Bremen .	„	„	229	...	...	...	229	229
Bremerhaven. .	Hull .	„	13	3	...	...	16	16
Hamburg	Hartlepool	„	25	10	...	...	35	35
„	Hull .	„	93	14	...	...	107	107
Total . . .		Foot-and-Mouth .	1139	50	...	11	1200	1200
		Sheep Scab .	...	10	...	...	10	10
Total			1139	60	...	11	1210	1210

"ALEXANDER WILLIAMS, *Secretary.*

"Privy Council Office,

"Veterinary Department, 15th March, 1875."

CATTLE PLAGUE.

Cattle plague is reported to have disappeared from Dalmatia and the coastlands; and as no fresh cases have occurred in the province of Austria that country is declared free of disease. Hungary is also said to be free from plague; but the disease prevails in Croatia, Sclavonia and on the military frontier.

PLEURO-PNEUMONIA.

Pleuro-pneumonia continues to exist in the Netherlands; but under the operation of the system which has been adopted for some time past, viz., slaughter of diseased animals and inoculation of those which had been herded with them, it is anticipated that there will be a considerable diminution in the number of attacks in the next month. In the four weeks which ended January 23rd, 275 cases occurred in 33 districts; in the corresponding period of the previous year, 300 cases occurred in 40 districts.

There is no important difference in the state of prevalence of the disease in this country.

FOOT-AND-MOUTH DISEASE.

It would appear from the official returns that foot-and-mouth disease is still prevalent in Germany, France, and Belgium. We also hear of its existence in Italy and Sweden. In Switzerland it is said to be declining. Foot-and-mouth disease has been checked in Norfolk, but it continues to spread in other parts of the country. Reports from Sutherlandshire are to the effect that the malady has extended all over that county.

DISEASE AMONG HORSES.

"Great apprehension is felt in Hull and the neighbourhood in consequence of the prevalence of a contagious and infectious disease amongst horses. The local veterinary surgeons have their hands quite full of cases; and Mr. Freeman, the inspector of the Local Authority for carrying out the laws relating to cattle plague, has more than a score of animals under treatment. A great many valuable horses

have fallen victims to the disease, and it is said that the North Eastern Railway Company lose a horse every other day. This represents a great loss to the company, as it is well known that all the horses kept by them are very valuable. It was conjectured that the disease was similar to that which decimated the horses in New York some time ago, but Mr. Freeman does not seem to think so. In some instances death has ensued in twenty-four hours, whilst in others the animals have lived for a fortnight. The disease is a lung disease, and is said to be very infectious. We are informed that the Contagious Diseases (Animals) Act does not apply to this disease, which makes the case more alarming. So far, we believe the disease has been confined to Hull and the immediate neighbourhood."—*Yorkshire Gazette.*

Mr. Freeman informs us that the disease referred to in the above extract is influenza, and that in his practice it has not assumed a particularly fatal character. The malady is associated with debility, and requires very careful treatment. Hence it generally happens that much loss is experienced when sick animals fall into the hand of the empiric.

Facts and Observations.

Exportation of German Horses.—The exportation of horses from Germany has been forbidden; a step on the part of the Imperial German Government which is likely to add to the present high price of horses both here and elsewhere, and consequently to seriously affect the interests of nearly every country in Europe.

In justification of the Ordinance, the *North German Gazette* alleges that the Government has in its possession copies of contracts written in French authorising the purchase of such horses as would be suitable for cavalry and artillery. Premiums of 100 francs were guaranteed to the dealers, who had commenced operations in Hanover and Pomerania.

The Foreign Cattle Market, Deptford.—An open-air meeting was recently held in the grounds of Saye's court, Deptford, to consider the propriety of petitioning Parliament against the Bill of the London Corporation

for enlarging the Continental Cattle Market. The chair was taken by Mr. Norfolk, and the meeting was addressed by Mr. Liardet, Mr. Deane, and other speakers, by whom it was urged that the market had turned out a complete failure, and that its refuse and "boiling down" processes had injuriously affected the health of the district, besides being the means of spreading foot-and-mouth, and lung diseases throughout the agricultural districts. The more immediate objection to the proposed Bill was that it contemplated the running of a road quite through the recreation ground which had been presented to the town by the trustees of the Evelyn estate. A petition was adopted, praying the House to reject the Bill, and also a resolution, entrusting its presentation to Mr. Boord.—*Daily News.*

Cremation.—The ministry of the Duchy of Coburg has given permission to the Society for Cremation in Gotha to carry its principles into practice, and measures are accordingly being taken to that effect.—*London Medical Record.*

The Influence of the Skin on the Urinary Secretion. By D. Koloman Muller (*Archiv für Experimentelle Pathologie,* 1873.)—This is an experimental research to determine how far the amount of urine excreted may be affected by applying to the skin cold, heat, friction, irritation by epispastiques, or layers of varnish. The following are briefly the results:—1. Cold increased the flow. 2. Heat diminished the flow. 3. Friction and epispastiques had no effect. 4. Varnishes caused a considerable diminution. This last effect is not what one would expect, but it may be accounted for by the fact that varnishes cause great dilatation of the vessels of the skin.—*Edinburgh Med. Journ.*

A New Method of Producing Artificial Diabetes. By C. A. Ewald. (*Centralblatt,* 1873, No. 53.)—Ewald has found that when nitro-benzoin is introduced into the blood of rabbits, sugar quickly appears in the urine to the extent of from 1 to 2 per cent. In dogs, large doses of nitro-benzoin introduced into the blood were not followed by diabetes, but a dose of from 7 to 10 grains put into the alimentary canal produced it within an hour. It is interesting to know that the reporter has found nitro-toluol, an allied substance, to have a similar effect.—*Ibid.*

THE VETERINARIAN, APRIL 1, 1875.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

INCORPORATION OF THE ROYAL VETERINARY COLLEGE.

THE announcement which we are enabled to make, that HER MOST GRACIOUS MAJESTY THE QUEEN has been pleased to grant HER ROYAL CHARTER OF INCORPORATION OF THE ROYAL VETERINARY COLLEGE, will be hailed with satisfaction by every zealous member of the profession as being a powerful means of effecting the advancement both of the science and practice of our art.

Among the powers bestowed on the College is one of creating *scholarships*, and of awarding *medals*, *prizes*, and *certificates of distinction* to the students. It needs no argument to prove that, if a privilege of this kind be fully and properly carried out, it cannot have other than an important elevating effect on the future students, especially when it is taken in conjunction with the recent improvement in the Matriculation Examination. If a better educated class of students crowd the lecture rooms and laboratories of the College year by year, a firm and secure basis will be laid on which to erect a lasting superstructure. When to this is added the power of appointing former students of the College, *Licentiates*, or those who have practised with particular distinction in their profession, *Fellows* of the College, with a right to use these distinctions publicly, it will be seen that the means of elevating the profession do not stop with the mere obtainment of scholastic honours as a stimulus to progress. Nor does the Charter stop even here, for it empowers the Governors to bestow the higher honour of *Honorary Associate* on distinguished persons, native or foreign, who have contributed in an especial manner to elevate veterinary science. All this has not been accomplished without much thought and labour, and the singleness of purpose which has actuated the Governors throughout merits the thanks of the entire profession. These thanks we cannot doubt they will receive.

It is right that we should add, that it was supposed by some members of the Council of the Royal College of Veteri-

nary Surgeons that the Royal Veterinary College in seeking a Charter of Incorporation was in reality merely looking to an advancement of its own interests at the expense of the profession. The view was a contracted one, and ought never to have been entertained. It has a complete answer in the fact that, if the Charter had not been obtained, the Governors had fully resolved to supplement the limited powers granted to the profession by the Charter of 1844, by exercising thcir prescriptive right of conferring honours on their students, and on selected members of the profession who had studied at their school. These honours would have had much value, but that value is heightened in a tenfold degree by the power to confer them being given by Royal Charter.

All around us tells of progress, and it cannot be said that the Alma Mater of the profession has done other than led the way to the still further advancement of veterinary science in the estimation of a discerning public. Ever true to the objects of her Founders, from the time of her establishment in 1791, she has laboured on. Doubtless her success has varied—has not always been encouraging—but still she has persevered. The emancipation of the Veterinary Art from a state of barbarism and the creation of a profession out of the rude materials orignally at command was a task difficult of accomplishment. Her early efforts, however, proved so successful that she presently assumed all the importance of a National Institution, and received the patronage and support of Royalty. This position she has ever since maintained, the College now having, as is well known, Her Majesty the Queen as its Patron, and His Royal Highness the Duke of Cambridge as its President.

As a matter of history we may mention that as early as 1812 His late Majesty, George IV, then Prince Regent, became Patron of the Institution, and in the same year the Governors received the additional support of another member of the Royal Family, the late Duke of Kent, who took office as one of the Vice-Presidents. In 1818, the late Duke of York became President, and was succeeded by the late Duke of Clarence. On the Duke coming to the throne as William the 4th, he became Patron of the College, and the late Duke of Cam-

bridge its President. Truly the College may be called a Royal Institution, as well as our Alma Mater. It may be rightly asked where should we have been as a profession but for the continuous efforts of the College? For fifty years and upwards the profession was willing to follow the lead of its parent, and then, by a Charter of Incorporation of its own, it sought to throw off its allegiance, believing it could advance without her assistance. We will not say that this was wrong; but we may ask where are the advantages which sanguine minds had pictured? Self-government we approve; but self-government has its drawbacks; it is apt to be too unyielding and exacting, more especially when the interests of others are mainly concerned, or when vested rights are supposed to be endangered. The parent's power and influence did not, however, suffer much by the act, still she saw that her direction was weakened. Upheld by her Charter of Incorporation, she takes her legitimate position as the pioneer of progress, not unwilling, however, to avail herself of the co-operation of kindred institutions who are ready to support her efforts to advance. Thus she has sought to regain her strength, and has succeeded.

Reviews.

Quid sit pulchrum, quid turpe, quid utile, quid non.—Hor.

Die Kolik der Pferde. Sechs Klinische Vorträge. Von F. Friedberger, Prof. an der Königlichen Central-Thierarzeneischule in München. Berlin, 1874.

Colic of the Horse. Six Clinical Lectures. By F. Friedberger, Professor at the Royal Central Veterinary School in Munich. Berlin, 1874.

Die Kolik der Pferde und das Wurmaneurysma der Eingeweidearterien. Eine Path.-Anat. und Klinische Untersuchung. Von Dr. Otto Böllinger. München, 1870.

Colic of the Horse and the Verminous Aneurism of the Intestinal Arteries. A Pathologico-Anatomical and Clinical Investigation. By Dr. Otto Boellinger. Munich, 1870.

(*Concluded from p.* 194.)

As Böllinger's summary proceeds, the pathological changes associated with the presence of worms in the arterial vessels

are more particularly dwelt upon, whilst the closing paragraphs declare the importance of this subject in relation to the welfare of the animals themselves and in connection with questions of social economy.

7.—In addition to the palisade worms one almost constantly finds a parietal thrombus contained in the aneurism. It covers the inner wall either partially or completely, being in the latter case perforated for arterial offshoots. This clot may occlude the artery, and it is not unfrequently continued into the arterial branches (peripherally) or into the aorta (centrally). Amongst the various changes that the clot undergoes, organization of its outermost layer and softening are the most frequent. The constant occurrence of this clot is due to the presence of the worms, to the inflammation, ulcerative and regressive affection of the intima, and to the dilation of the arterial tube.

8.—The palisade worms are seldom absent from aneurisms of the horse. Their not being present is merely an accidental circumstance. On the average, nine palisade worms go to a verminous aneurism, and eleven in the horse. The highest number of worms found in one horse reached 121. Not unfrequently, also, palisade worms or their coverings, in the form of larval skins, are found in the aneurismal walls. The immigration and emigration of the palisade worms out of the intestine into the aneurism, and the reverse, take place probably, as a rule, within the arterial circulation. The path of the worm does not appear to be always the same, inasmuch as they can also wander through the peritoneal cavity. The worms found in the aneurismal walls are probably mostly only strayed specimens.

9.—From a comparative pathologico-anatomical point of view, the developmental history of the aneurysma verminosum proves that a circumscribed endo-arteritis can determine the formation of an aneurism.

10.—Like the worm aneurism itself, atheroma of the abdominal arteries arises from a circumscribed acute and subacute endo-arteritis. The histological changes in the secondary atheroma of horses are perfectly analogous to those of the spontaneous atheroma of man. Idiopathic atheroma, as seen in man, does not occur any more in the horse than in the other domestic animals. Atheroma in the horse is always secondary. To be sure, one observes an idiopathic chronic endo-arteritis in many abdominal arteries of the horse, which, however, never exhibits indications of atheromatous degeneration.

11.—In consequence of its position the worm-aneurism of

horses is not open to physical examination, and on that account cannot be diagnosed by physical signs; moreover, it offers no characteristic symptoms. Its termination by rupture is extremely rare; the aneurisms of the abdominal aorta being more disposed to rupture than those of the anterior mesenteric artery. Of eighteen cases of known perforation, fifteen opened into the peritoneal cavity and three into the bowel. The dangerous symptoms of the worm-aneurism are exclusively due to embolism and thrombosis of the affected artery, arising from the parietal clot. The latter becomes especially dangerous through its increasing size and the softening which often accompanies it. The absorption and shrinking of this parietal clot, be it organized or not, is materially assisted by the high pressure to which it is exposed.

12.—The very marked symptoms of vascular obstruction —the sero-hæmorrhagic intestinal infarct—in embolism and thrombosis of the mesenteric arteries are easily explained by paralysis of the muscular coat of the intestine, by the absence or paucity of valves in the portal vein, by the readiness with which meteorismus (or flatus) arises, especially in herbivora, and by the loose consistence of the intestinal walls and villi.

13.—The occlusion of the intestinal arteries, especially that arising suddenly, always has for its result a partial or complete paralysis of the portion of bowel which they supply. The palsy of the intestine causes the forward movement of the intestinal contents to cease, a stoppage of the fæces, a hindrance to the discharge of fæces and gas, and also that exceedingly dangerous formation of gas (within the intestinal tract) which in the herbivora is so abnormal both quantitatively and qualitatively.

14.—In embolism and thombosis of the mesenteric arteries the symptoms during life are entirely identical with those observed in the so-called colic of horses, as has been determined by numerous observations. The partial paralysis of the bowel which is brought on by the embolism and thrombosis of the mesenteric arteries forms in great part the chief and leading feature of the series of symptoms known as the "colic" of horses. The palsy of the bowel which arises in this way may explain also the frequent ruptures of the digestive canal and the greater number of its changes in position. The latter are specially favoured by the structure of the abdominal viscera in the horse.

15.—The old changes which one finds in the peripheral branches of the anterior mesenteric artery, in the form of expired and partly absorbed embolic and thrombotic pro-

cesses (pigmentation, arterial and venous thrombi), particularly in connection with those arteries which are the seat of the aneurism, decisively prove that the large majority of colics resulting in recovery, so far as they do not depend upon known injuries, are caused by paralysis of the bowel from embolism and thrombosis. The sudden occurrence, course, and result of these kinds of colics also testify to their embolic origin.

16.—The œdematous, inflammatory, and hæmorrhagic processes that one often finds described as the cause of death in colic almost exclusively depend on thrombosis and embolism of the mesenteric arteries, the cases forming about 40 to 50 per cent. of all fatal colics.

17.—The rapid course in fatal colics, as well as the preponderating symptoms of dyspnœa in cases of recovery, is finally due to the abnormal development of gas in the alimentary canal. In addition to the diminution of the respiratory surface by the lofty position of the diaphragm, a direct gas-poisoning (carbonic acid and sulphuretted hydrogen) probably contributes to the intensity of the symptoms and the rapid course by diffusion of the abnormally developed gas out of the intestinal canal into the blood.

18.—The variety of the anatomical derangements caused by embolism and thrombosis of the intestinal arteries is faithfully mirrored by the variety of the clinical symptoms and the different degrees in the intensity and course of the colic.

19.—Amongst every 100 horses afflicted with internal disease 40 are ill with colic. Among any 100 deceased horses 40 have perished from colic, and among 100 colic patients 87 recover and 13 die. These figures prove that neither amongst the epizootic nor sporadic diseases of horses is there any other affection which occurs so frequently or claims anything like so many victims. Like the frequency of the worm-neurism, the amount of disease and mortality increases with advancing age. The etiology of the colic of horses finds in the thrombosis and embolism of the mesenteric arteries, with the consequent paralysis of the bowel, an all-sufficient explanation, whilst the causes of colic hitherto accepted were for the most part insufficient.

20.—In a great number of cases the thrombus of the worm-aneurism is continued past the mouth of the anterior mesenteric artery, into the lumen of the aorta and, as such, is the exclusive cause of the embolisms of the pelvic and crural arteries which bring about the intermittent hobblings (the author says, "intermitterenden Hinken," not "Hahnen-

tritten," the usual equivalent term for stringhalt). Considering the excessive frequency of the thrombus being continued into the aorta, it becomes highly probable that a great part of the diseases and lameness of the posterior extremities (such as "Hüft-und Krewzlähme, unsichtbarer spath, &c.," which we presume may be fairly rendered as "sciatic and hip or spinal lameness, obscure spavin, &c.") are due to occlusion of the arteries.

21.—Owing to the fibrous thickening of the connective tissue of the root of the anterior mesenteric round the aneurism, and to the considerable size of the latter, disturbances of the innervation of the intestine, (as well as) hindrances to the passage of the chyle, and irregularities in the portal circulation, may be created, which may well lie at the root of many chronic disturbances of digestion in horses.

22.—Considering the great losses and heavy social disadvantages that are occasioned by the "colic" of horses to the horse-breeder, to agriculture, and to the general welfare (of the community), it is of the highest importance to discover means which should prevent the introduction of the embryos with the food, and, as a consequence, the migration of the palisade worms into the mesenteric arteries of the horse.

The extent to which this review has already gone precludes additional comment, further than to say that the memoirs of Böllinger and Friedberger do their respective authors infinite credit. T. S. C.

Extracts from British and Foreign Journals.

FRIEDLANDER, WALDENBURG, ZUELZER, ETC., ON THE INOCULATION OF TUBERCLES.

In the 47th session of the Association of Naturalists and Medical Men of Breslau, Dr. C. Friedländer, of Strasburg, made the following communication (*Berliner Klinische Wochenschrift*, November 2, 1874). Villemin and others have induced disease by introducing bits of cheesy matter from tuberculous subjects, and other foreign materials, even caoutchouc, under the skin, or into the serous cavities of animals; as well as by injecting the cheesy matter into the blood-vessels. This is called tuberculosis, and from this etiology conclusions as to the tuberculosis in human beings have been

freely drawn. It is quite true that there are many points of resemblance between the two affections; yet in a clinical point of view there are some striking differences. Friedländer injected 29, 30, or 40 cubic centimètres of a fine emulsion of cheesy substance from human bodies into the external jugular vein in twelve dogs. They were quite well after the operation; the wounds healed; only one died from an accident; the eleven others continued well nourished, became fatter, had no fever nor any other disorder, till they were killed three or four weeks after the operation. In ten of these eleven there were found in the liver very numerous little nodules, grey, transparent, of the size of a pin's head; the larger ones opaque in the centre, resembling miliary tubercles. These bodies were constantly present in the spleen, not always in the lungs and kidneys, not at all in the eyes, pleura, or pia mater, only a few in the peritoneum, and those near the liver. Those which were not degenerated in the centre consisted, as shown by the microscope, of an accumulation of round cells, of tolerable size, without any intervening substance; and for the most part the periphery only was supplied with blood-vessels. The opaque centres consisted of cells which had undergone fatty degeneration. The nodules in the lungs consisted of the air-vesicles filled with cells of unmistakably epithelial type; what Buhl calls lobular foci (*Heerde*) of desquamative pneumonia. Small collections of cells were also found between the bronchi and the vessels; but nowhere any formation of nodules in the connective tissue, nothing except such interstitial formations as are common in pneumonia. The disease, thus induced by the experimenter and others in dogs and other animals, is essentially different from human miliary tuberculosis, for the latter is a severe febrile affection, and there are other organs affected beforehand in human beings which escape in dogs—for instance, the peritoneum, eye, and pia mater. Human tubercles are never supplied with blood-vessels. Giant-cells occur in them, not in the animals experimented on. The things are, then, not identical, and there is probably great difference in their etiology. In the experiment with india rubber mentioned above, if the water and india rubber be previously put into absolute alcohol before being introduced under the skin, or into the peritoneum, the wound heals well, and no "tubercles" are produced. The cheesy abscess and so-called tubercles are the simple sequel of a certain kind of foulness (*Unsauberkeit*, lit. impurity). It is, therefore, not safe to draw any conclusions as to human tuberculosis from these experiments. Professor Waldenburg said, *inter alia*,

that it was not true that giant-cells were never found in the inoculated tubercles. With Virchow, he believed these giant-cells were not the specific element of true tubercle. Klebs, Hering, and himself, had all seen giant-cells in inoculated tubercles. It was incorrect to say that the animals did not die of the inoculations; in fact, death was more common than recovery in his own experiments. The distribution and structure of these and human tubercles were almost identical. Waldenburg had seen animals become extremely emaciated after the inoculation, and die with large cavities in the lungs surrounded with miliary tubercles, which were also present in the pleuræ, liver, spleen, kidneys, peritoneum, &c., just as in men. The distribution doubtless varied with the site of the primary focus and its extent, and with the kind of injection. Yet, whether men or animals are concerned, the lungs and the liver suffer most. It is well to be exact and critical, but not too sceptical. Dr. Birch-Hirschfeld thought dogs bad animals for experiments; he could never develop tubercles by introducing clean india rubber into the peritoneum. Professor Friedreich drew attention to the great need for clinical observation in these experimental cases. We are in danger of falling into old errors again about specific elements in tubercle. He has found these giant-cells in typhoid products, and in leukæmic nodules when no tubercle was thought of. Professor Zenker said these giant-cells were sometimes present in human tubercles, sometimes absent. On this account E. Wagner gave the name of lymphadenomata, in order not to exclude nodules otherwise characteristic from being classed as tubercles. It would, perhaps, be as well to divide tubercles into giant-celled tubercles and dwarf-celled tubercles—tuberculum giganto-cellulare and tuberculum nanocellulare. How cautious one ought to be was well shown by the case of a wether sheep which had hydatids of the lung; for, starting from the cheesy wall of the sac, the pleura was infiltrated with most minute but exquisite giant-celled tubercles—the product of infection. Yet the animal was fat, apparently healthy, and had no appearance of dying from tuberculosis. It would not do for us to totally reject all the lessons taught by experiments.

Dr. Zuelzer (of Berlin) from his own experiments and those of Gscheidlen and Traube on putrid intoxication, and the innocuity of artificially developed bacteria, could confirm the statement that various animals, dogs, rabbits, &c., could bear very well the introduction of large quantities of *Bacterium termo*. But the moment any one added to these innocuous substances any putrid poison (septic material)

the symptoms were entirely altered. Septic or pyæmic symptoms, often somewhat complex, immediately set in. If the matter were introduced into the lungs, then pneumonia was set up, and in the centre of these pneumonia foci there were masses of granular and staff-shaped bacteria. He found the lungs of such animals, when killed, studded with tubercles, in large or smaller numbers.

Dr. Friedländer said he had experimented on other animals besides dogs—such as guinea-pigs, rabbits, &c. He thought too much attention had been given to mere morbid anatomy and histology in these things. We must not be deceived by mere superficial or partial resemblances. Undoubtedly there are cases of miliary tuberculosis without giant-cells—only collections of small granules so to speak, a sort of pretubercular formation. The views he had expressed were very similar to those published by Friedreich. The production of tubercles by introducing india rubber into the abdominal cavity is closely connected with Zuelzer's experiments just related, and also with those of Burdon-Sanderson. —W. Bathurst Woodman, M.D.—*London Medical Record.*

ORIGIN OF PUS.

A fresh paper in Robin's *Journal de l'Anatomie*, by M. Picot, well known as a determined opponent of Cohnheim's, or the emigration theory of the origin of pus, shows that this subject is not even yet quite exhausted. Within the last year or two several memoirs have been published favouring the view that the cells of pus are white corpuscles. In the first place Axel Key and Wallis have studied the changes that occur in the cornea when its centre is touched with a point of nitrate of silver, and find that immediately around the eschar a zone forms, in which the nuclei and corpuscles of the cornea become vacuolated, and undergo degenerative changes. At the same time a number of cells resembling the white corpuscles of the blood, and which they believe to be white corpuscles that have escaped from the vessels, appear at the periphery of the cornea, and make their way, by virtue of their amœboid movements, to the injured part. In the same way, Max Schede, having induced inflammation of the skin by tincture of iodine and by the subcutaneous injection of a drop of croton oil, observed that suppuration took place, not in the immediate vicinity of the droplet, but at some distance from it, and near the vessels, which became, as it were, coated with a layer of

escaped leucocytes. Talma repeated the experiments of Axel Key, and found two kinds of corpuscles in the inflamed cornea—one spherical in form, representing pus-corpuscles; the others, stellate and flattened, were the corneal corpuscles. No intermediate forms were found, and he too pronounced in favour of Cohnheim's theory. Friedländer came to the same conclusions from observations made on inflamed lung. Purves, having sought in vain for apertures in the vascular walls, describes the leucocytes as forcing their way through the walls of the vessels, which close behind them. Lastly, Eberth maintains that after central cauterization of the cornea the inflammatory process commences at the periphery. M. Picot, in commenting upon these various papers, observes that no evidence is afforded in any of them that the observer has actually witnessed the escape of the corpuscles from the vessels. They find them in the tissue on section, and they take it for granted that the corpuscles have traversed the vascular walls. Those who do not admit the migration of the white corpuscles may be divided into the adherents of Virchow, who derive the corpuscles in question from the proliferation of the cell elements of the cornea, and those who, denying the hæmatic origin of the pus-corpuscles as well as their descent from the proliferation of connective-tissue-corpuscles, decline to commit themselves to any express statement of their mode of genesis. Amongst the former may be enumerated Duval and Pfungen; and Feltz holds the same view in a somewhat modified form, believing that the inflamed corneal or connective-tissue-corpuscles become filled with a finely granular protoplasmic matter, in and at the expense of which the leucocytes are formed. Boettcher's observations have led him to very similar conclusions, the corneal corpuscles, in his opinion, breaking down into a granular mass, in which the pus-cells arise without pre-existing nuclei. Purser and some others appear to hold the intermediate view that, in the case of the cornea at least, some of the pus-corpuscles proceed from the proliferation of the corneal corpuscles, whilst others are escaped white corpuscles of the blood. In his last communication Cohnheim materially alters his former views, and holding the pressure of the blood, the amœboid movements of the white corpuscles, and the dilatation of the pores of the vessels after distension, as in all circumstances exercising a secondary influence only on the escape of the white corpuscles, now attributes their escape to an alteration of the walls of the vessels themselves, the nature of which alteration he does not, however, attempt to define,

M. Picot's observations, now recorded, were made upon the mesentery of the frog, with a view of determining the changes undergone by the connective-tissue-corpuscles. Inflammation was excited by the introduction of charpie or of filtering-paper, or by the injection of slightly irritant fluids, such as weak alcohol-and-water, or tincture of iodine. Many animals were operated on, and the examinations were made every two hours. The results have been to show that the corpuscles of connective tissue undergo progressive enlargement, so that in the course of twenty-four hours they have doubled their original size. They become at the same time granular, but their nuclei remain visible. The vessels are filled with red blood-corpuscles having a faint granular zone round their nuclei, with here and there a white corpuscle presenting its normal aspect. Outside the vessels are also leucocytes, but these—and this is he thinks very important in regard to their genesis—present great variations in point of size; and in the formation of this first set of pus-corpuscles the connective-tissue-corpuscles take no part whatever, excluding, therefore, all idea of proliferation. By-and-by, however, the enlarged connective-tissue-corpuscles lose their nuclei and break down into a granular mass, then become fusiform, and in the course of the next forty-eight hours present all kinds of changes of form. From this mass leucocytes may arise. It thus appears that M. Picot admits two modes of origin of the white corpuscles—one by independent genesis in the tissue, and the other by development from the granular mass resulting from disintegration of the normal cellular elements.—*Lancet.*

MOSSO ON MOVEMENTS OF THE ŒSOPHAGUS.

A. Mosso (*Movimenti dell' Esofago,* Torino, 1873, p. 44) says that the method employed by the author to study the movements of the œsophagus was quite simple. The œsophagus was exposed in the neck, and into it a small wooden ball of the size and shape of an olive was introduced. To this ball a thin flexible wire was attached, so that it could be extracted from the stomach. The experiments were made on dogs and cats. A transverse section of the œsophagus does not hinder the propagation of the peristaltic movements when the upper half is stimulated. The excision of a part of the œsophagus, *e. g.* from under the larynx to the arch of the aorta, does not arrest the peristaltic movements from above downwards

under similar conditions. Even when the œsophagus was ligatured two or more times over a cylinder of wood introduced into it (the ligatures were separated by about one centimètre from each other) these movements were propagated from above downwards.

In a second series of experiments the author found, when the vagi were stimulated by the opening strokes of an ordinary induction apparatus, that the contractions of the œsophagus formed a gradually ascending "Treppe," such as Bowditch has described for the heart (*Ueber die Eigenthumlichkeiten der Reizbarkeit welche die Muskelfasern des Herzens zeigen.* Ludwig's *Arbeiten*, vi, p. 139).

The excitability of the vagi continues extraordinarily long after death. A dog showed, four and a half hours after death, these movements in the exposed œsophagus, when the recurrent nerve was stimulated. An excised portion of the œsophagus of a cat, when filled with air, showed, after thirty hours, slight movements on the vessel in which it lay being warmed.

The author has not been able to find the movements of the lower part of the œsophagus described by Magendie and Schiff. He finds that the lower portion of the œsophagus is always at rest, except when the upper part is irritated and caused to contract.—*The London Medical Record.*

MATHIEU AND URBAIN ON THE PART PLAYED BY THE GASES IN THE COAGULATION OF THE BLOOD.

In a paper communicated to the Academy of Sciences at the meeting held on September 14th, 1874, MM. E. Mathieu and V. Urbain state, as the result of their experiments: 1. That carbonic acid is the agent of the spontaneous coagulation of the blood; 2. That during life the obstacle to this coagulation resides in the blood-corpuscles, these having as their special function the fixation not only of the oxygen, but also of the carbonic acid contained in the blood. As a result, the coagulating action of the last-named gas cannot be exerted in physiological conditions. They proceed to show that there are many proofs of the participation of carbonic acid in the phenomena of the spontaneous coagulation of the blood. Thus, the amount of carbonic acid contained in blood before coagulation, and after coagulation, was at 100° F., 48·05 and 39·38 cubic centimètres; at 86° F., 50·00 and 44·85 cubic centimètres; at 59° F., 49·00 and 40·95 cubic centimètres; and at 50° F., 54·50 and 42·50 cubic centimètres. Again, the blood which returns from glandular

organs, and especially from the kidneys, is incoagulable, and this blood contains very little carbonic acid (renal arterial blood 49·78 cubic centimètres per cent., renal venous blood 16·00 cubic centimètres per cent.). So also, if the removal of carbonic acid from the blood be favoured by simple exosmose, coagulation will not take place; yet if it be placed in an atmosphere of carbonic acid, coagulation rapidly sets in. The clots, however, are softer than those which form in air, rendering it probable that oxygen influences their consistence. Lastly, certain neutral salts impede or prevent coagulation, but such salts fix a notable volume of carbonic acid, and thus withdraw it from the blood.—*London Medical Record.*

Analysis of Continental Journals.

By G. Fleming, M.R.C.V.S., Royal Engineers.

PROTECTIVE INOCULATION FOR CONTAGIOUS PLEURO-PNEUMONIA.

M. Caussé, Veterinary Surgeon at Versailles, France, writes to the *Recueil* for December, 1874, on the subject of contagious pleuro-pneumonia, and protective inoculation for that malady. With regard to inoculation, he says that in April, 1867, in a farm at the Canton of Trappes the disease had carried off eight out of a herd of seventy cattle which were being fattened. Inoculation was practised on the tail by means of the grooved lancet, in the presence of the veterinary surgeon to the Third Hussars and a farmer in the neighbourhood, and with complete success. One animal died from the effects of the inoculation eight days afterwards, but the others remained exempt from the malady. Encouraged by this success, Caussé resorted to inoculation when circumstances required its performance from that time up to the present, and in the majority of cases the results have been favorable; though not to such an extent as those of other operators who report that they never had any losses from it. On the contrary, notwithstanding certain precautions, his losses have been four and six in twenty-five and thirty inoculations. This is explained, however, by the too late period at which the operation was performed, the disease having already prevailed in the stable for from six weeks to two months.

In 1868, of thirty-two cows in a dairy near Versailles, two died of pleuro-pneumonia after inoculation. In 1869, Caussé practised inoculation in the stables of stock-breeders where the malady had prevailed for several months. The contaminated animals could not be isolated, as there was no accommodation. In these conditions, of twenty-eight animals kept permanently in stables near Versailles, six which had been inoculated offered such serious symptoms of pleuro-pneumonia that it was deemed prudent to destroy them. In another farm nineteen cows were inoculated, and the result appeared to Caussé sufficiently conclusive. Three animals died from the disease soon after inoculation, but when he wrote two months subsequent to the death of the last animal no other deaths had occurred, and he thought the stable might be declared free from the scourge. Lastly, on the 9th of last October he inoculated ten cows in a stable in which six had already perished since August 15th. The disease had been wrongly diagnosed by an empiric; and though Caussé had prescribed immediate isolation, as well as the necessary hygienic measures, he feared the inoculations he made would not be altogether successful, and that some of the animals would prove refractory.

With regard to the consecutive phenomena of inoculation, Caussé remarks that these may vary considerably in their manifestations. Sometimes it is not until twelve to fifteen, or even eighteen to twenty-two days have elapsed that the pustules appear. In these instances numerous pustules the diameter of a franc invade the perimeter of the tail and extend towards its root; from these a citron-coloured serosity, analogous to that obtained by pressing a piece of the diseased lung, exudes. Caussé had frequently to make a number of deep incisions on each side of the swollen tail, and to cauterise them with the hot iron. Sometimes it was necessary to amputate a third, and even one half of the tail, well above the mortified portion. A good result was always obtained by dressing the consecutive wounds with carbolic acid, and applying white-lead to the swellings.

In summing up, Caussé believes that he is justified in concluding, from the facts observed, that protecttive inoculation should always be had recourse to as soon as pleuro-pneumonia appears in a stable, as it affords the only chance of saving the majority of the cattle when they are exposed to the attacks of the contagion.

Caussé alludes, in his letter, to inoculation experiments by the direct injection of the virulent fluid into the veins;

and M. Bouley, editor of the *Recueil*, to whom his communication is addressed, and who undertook these experiments in 1869, in the dairy of Pré Catelan, Bois de Boulogne, refers to them as most unfortunate. Of six animals so inoculated, three succumbed to the excessive tumefaction that commenced at the seat of inoculation, and invaded the entire neck. Weighed when the autopsy was being made, these masses of infiltrated tissue were no less than from ten to fifteen kilogrammes (22 to 33 pounds). With two others of the inoculated animals the local disturbance was combated by an antiseptic treatment, and with the sixth, the tumour that formed at the seat of inoculation had only the dimensions of a small thrombus, and was of no importance. "The object I had in view," adds M. Bouley, "was to obtain the advantages of inoculation by the direct mixture of the pulmonary fluid with the blood, and to avoid the gangrenous accidents which so frequently result from the insertion of that fluid into the cellular tissue. The result, as will be seen, deceived my hopes, and, instead, we had a lamentable reality. But it is necessary to apologise for the failure by stating that the canula used in the intra-venous injection was a little split, though this was not observed at the time, and allowed some drops of the virulent fluid to escape into the cellular tissue; so that the inoculation was made by the veins and also by the direct penetration of the virus into the cellular tissue external to these vessels. Given the very active properties of this fluid, the extremely irritant action it produces, even in the minute inoculation doses, on the tissues into which it penetrates, we can explain the accidents that occurred in consequence of the injection into the cellular tissue of the neck of some drops which escaped from the canula that was intended to convey the fluid exclusively into the jugular vein. Later experiments made by Reynal at Alfort, at my request, have proved that with care such accidents may be averted. The events of 1870 have not allowed us to assure ourselves if the cows thus inoculated had acquired the immunity that the ordinary inoculation confers."

Bouley also states that other experiments were in course of execution at Alfort, with a view to discover the effects of the ingestion of the pulmonary fluid into the digestive organs. "The experiments of Renault, confirmed by those of Chauveau, having demonstrated the possibility of inoculating a certain number of virulent maladies by the digestive organs, it would have been interesting to learn the result of the application of this procedure in the transmission of

pleuro-pneumonia, not only with respect to its immediate effects on the organism, but also as to the preservative action which might follow. But, unfortunately, here also everything was interrupted by the war."

[The result of Bouley's experiments in the three calves which succumbed to the swelling in the region of the neck, with what had been previously observed, demonstrates the specific virulency of the fluid from the diseased lung—a specificity which is not only exemplified in the character of the exudation and the active proliferation of its elements, but also in the period of latency that ensues after it has been introduced into the connective tissue in any part of the body. In this respect it comports itself like the virus of other contagious inoculable diseases. With regard to intravenous injection of the virulent fluid, it would be interesting to know whether, when successfully performed, it affords immunity to the animals operated upon. That it produces more or less constitutional disturbance when introduced in this way as when it is inserted beneath the skin is evident from the symptoms of fever and increased temperature. Reynal's experiments at Alfort in 1868 and 1869, alluded to by Bouley, consisted in administering to bovine animals portions of diseased lungs and large quantities of the exudation. But no result of a positive character was observed. This tended to prove, so far, that the virus does not find access by the digestive organs.

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

The forty-first quarterly meeting of the above association was held in the Medical Institution, Hope Street, on Friday evening, 12th February. The President, George Morgan, Esq., in the chair. The following gentlemen were present, viz.—Messrs. Procter, Reynolds, Sumner, and the Secretary, Liverpool; Messrs. Greaves and Faulkner, Manchester; W. Lawson, Woolton; Wall, Warrington; and Dr. Brown, Edinburgh. Letters of apology had been received from Messrs. W. A. Taylor, President of the Lancashire Veterinary Medical Association; M. A. Cartwright, Whitchurch; W. Wood, Wigan; and T. D. Broad, of Bath; the latter-named gentleman forwarded to the meeting, through Mr. Greaves, of Manchester, a spring truss which he had used with success for bursal enlargements. Mr. Wall,

of Warrington, was unanimously elected a member of the association. The President read a short but interesting suggestive paper on "Windgalls," which gave rise to an animated and lengthy discussion, in which every member present took part. The discussion was rendered further interesting by the presence of several medical visitors, who at the request of the president entered fully into the mode of treatment adopted by the medical profession in analogous diseases in the human subject, and expressed their surprise at hearing that veterinary surgeons did not find it essential to exclude the air in the treatment of open bursæ, as in the practice of human surgery it was held by all authorities to be of vital importance to do so. The majority of the members agreed that in opening bursæ they had the greatest success when they made a free opening. Mr. Procter related the history of several bad cases which he had operated on, and stated that he was most successful when he opened the bursæ freely. The question was raised whether windgalls constituted unsoundness. After a good discussion it was the general opinion that in young horses, if large, they would be serious, and constitute unsoundness, but if small, and in horses over seven years old, they would not be at all likely to interfere with the value or usefulness of the animal. The President closed the discussion by commenting on the various points of interests raised during the debate.

A vote of thanks to the President for his paper terminated a very agreeable and interesting meeting. C. M. Elam,
Hon. Sec.

Veterinary Jurisprudence.

IMPORTANT CATTLE DISEASE PROSECUTION.

"Extraordinary Scientific Evidence."

At a Justice of Peace Court, held at Dumfries on Tuesday, March 2nd, the justices being Mr. Witham, of Kirkconnelly (presiding), Mr. Leny, of Dalswinton, Capt. Lyon, of Kirkmichael, Mr. Johnston, of Cowhill, Mr. Johnstone, of Bodesbeck, Mr. Moffat, of Ardnacloich, Mr. Kennedy, of Dalmakerran, Mr. Barker, of Woodlands, Mr. Martin, of Dardarroch, and Bailies Wood and Rennie—a case of great importance, and one which has created considerable interest in the county, was heard. Thos. Kennedy, farmer and sheep dealer, residing at Burnside, parish of Dunscore, was charged, at the instance of Mr. Jones, J.P. Fiscal, with a contravention of the Contagious Diseases (Animals) Act, 1869, in so far as, on 1st Feb. last, on the highway or thoroughfare leading from Dumfries to Thornhill, and at that part thereof between Carsemains and

Ellisland, in the parish of Dunscore, he did unlawfully cause to be driven forty, or thereby, sheep affected with a contagious or infectious disease, viz., a foot-and-mouth disease, whereby he had become liable to a penalty not exceeding £20, or, in the discretion of the justices, to a penalty of £5 for each sheep, and failing payment, to imprisonment for a period not exceeding 60 days.

Accused pled not guilty, and was defended by Mr. David Brand, advocate; and Mr. Robert Johnstone, advocate (instructed by Mr. Jones), appeared for the prosecution.

Witnesses were then called in support of the complaint.

David Fenton, superintendent of County Constabulary, produced the following letter from Mr. Kennedy to the Local Authority;—"Burnside, Dunscore, 28th January, 1875.—Sir,—Having heard foot-and-mouth disease was spreading in this district, and having 257 sheep on Carsemains, near this, some of which are lame, I got Mr. Paterson, V.S., to see them to-day. He tells me a few are affected with foot-and-mouth disease.—I am, yours respectfully,

Thomas Kennedy."

James Smith, shepherd to Mr. Kennedy, examined by Mr. Johnstone, deponed to driving some sheep belonging to Mr. Kennedy, along the public road from Carsemains to Ellisland, a distance of three quarters of a mile, on 1st February. They had been on turnips at Carsemains in a field on the roadside. Alex. Bell and Mr. Kennedy's brother were along with him. They left 25 of the sheep, which they drew from the flock, behind, as they were lame. They were the worst of the lot. You thought they could not walk so far?—They were expected to go farther—to Kirkgunzeon. But did you leave them because they were unable to travel so far?—Yes. They did not meet Mr. Thomas Kennedy when driving the sheep to Ellisland, but it was by his orders they were being removed. Some of the sheep that were lame were so on more than one foot. Examined the sheep and thought they were suffering from foot-rot. Part of the hoofs were coming off. Was it the upper or lower part of the hoof that was bad?—Sometimes both. Have seen sheep suffering from foot-rot with the upper part of the hoof ill, but believe it begins at the bottom. Have seen sheep lame with foot-and-mouth disease, and could distinguish that disease from foot-rot. What are the symptoms like?—The back is arched. He assisted in paring the most of the sheep on 30th January, and took off the "clouts" before removing them. They drove some of the sheep after the clouts came off. They were not very lame. The difference between foot-and-mouth disease and foot-rot is that the former begins at the back of the clouts, and the latter between the clouts. They drove 231 sheep in all along the road on 1st Feb., but could not say how many of these were lame; probably 40 or 50. They were put into a field of turnips at Ellisland, where they were still. Some of them were lame yet, and some had got better.

Cross-examined by Mr. Brand. Began to take charge of the sheep in question when Bell left Mr. Kennedy's employ, about the

beginning of February. They only pared what sheep required it. Saw Professor M'Call from Glasgow visiting the sheep at Ellisland yesterday. He inspected about half-a-dozen very minutely. Mr. Kennedy was there, and by his orders killed one of the sheep at Carsemains, and one of the lot at Ellisland, and gave the feet to Professor M'Call. The sheep were suffering from foot-rot, and in witness' judgment had not foot-and-mouth disease at all. Helped to pare half of them, and did not see anything to indicate foot-and-mouth disease, but well marked cases of foot-rot. He came first to the conclusion that the disease was foot-rot when he pared the sheep. He was informed by Mr. Kennedy that if he saw anything to indicate foot-and-mouth disease, he was to acquaint him of it. The sheep that were removed from Carsemains were scarcely so lame as those left behind, but some of those that were taken away were very lame. They looked all the sheep with the view of seeing whether they required paring, and would pare over 100.

By Mr. Leny. What remedy do you adopt towards sheep affected with foot-and-mouth disease?—I do not know; I am not so skilled in the disease as to be able to answer the question.

Alex. Bell, shepherd, was engaged with last witness in driving Mr. Kennedy's sheep from Carsemains to Ellisland on 1st February. They shifted about 230, and left 25 behind, because they were lame. Part of them were unable to walk all the way to Ellisland, but they could all stand. He believed those left behind were lame in all the four feet. Was engaged in paring the feet of the sheep on the Saturday before their removal. There were some loose hoofs among them, and some came off altogether. Noticed no gathering about them, but they were moist with white matter between the clouts at the top of the hoof. Could not say he knew much about foot-and-mouth disease, as he never saw it on sheep, but he had had to do with foot-rot, and believed this was it. Could not tell where foot-and-mouth disease begins, and could not tell the difference betwixt it and foot-rot if the animal was only affected in the feet and not in the mouth. The hoofs of the sheep had a sort of sour smell, occasioned by the foot-rot. Did nothing to the sheep except to pare the hoof. After running about Mrs. Williamson's holm at Carsemains they were turned back upon the turnips. Mr. Thos. Kennedy met them on the road when they were putting the sheep into the field at Ellisland. Witness left Mr. Kennedy's employ about three weeks ago, and had not seen the sheep since for two or three days prior to that time. Saw Mr. Paterson, the inspector, on 28th January, the Thursday before the sheep were shifted, and heard him say it was foot-and-mouth disease that was wrong with them. Witness examined the sheep's feet and did not think there was anything wrong with them. He caught three of the sheep for Mr. Paterson, and he examined the feet of the whole of them and the mouths of two, and did not find anything wrong with the mouth so far as he could see. Mr. Kennedy said to Mr. Paterson that it could not be foot-and-mouth disease, because the sheep were not affected at the mouth. He

was not there when Mr. Paterson examined the sheep the second time.

Cross-examined—Mr. Paterson was engaged about a quarter of an hour in examining the three sheep at Carsemains. The examination took place in a grass field. The sheep were feeding well at the time. He took notice of the sheep examined by Mr. Paterson, and saw no blisters. Saw no raw surface, but only the white matter between the clouts. Saw no appearance of eruption round the back of the hoof where it joined the leg. Mr. Paterson did not, that he saw, examine the joints above the hoof. Witness drove the sheep from Clauchrie, about three miles from Carsemains, on 17th Nov., and they were very lame then. He thought it was foot-rot that was the matter with them at that time. The turnip field at Carsemains was very damp in the hollows, and favourable to the production of foot-rot. He had seen sheep five years ago suffering from foot-rot when they had to be brought home on account of the severity of the disease. They belonged to Mr. Kennedy, and were nearly as bad as the present. They had to be pared and dressed. When paring the sheep in question along with previous witness, he examined the mouths of nearly all of them, and discovered nothing the matter with them. They could move along pretty well when stirred up, and their backs were not arched. They were eating as many turnips as any other sheep in the neighbourhood—fully an acre in the week. Mr. George Kennedy, accused's brother, told him to remove the sheep to Ellisland and keep back the lame ones, which he did. With a little difficulty they could have removed the sheep other than by the public road. He was present at the examination of the sheep on 8th February by Professor M'Call, Glasgow, and Mr. Kennedy was also there. The sheep were examined in a shed, about four-score being taken in at a time. He seized every sheep and turned it up, and Mr. M'Call examined every foot and mouth. He examined nearly five score in that manner, the time occupied being fully two hours and a half. Was Mr. M'Call's examination of the remainder of the sheep more general? —He ran them past and had all the lame ones picked out. He never saw as careful an examination in all his life. There was no dyke between the grass field and the turnip field at Carsemains, and Mr. Kennedy's sheep got several times mixed with Mrs. Williamson's, which were on the grass. Mrs. Williamson's sheep sometimes ate the partially eaten turnips after Mr. Kennedy's sheep. Never heard of Mrs. Williamson's sheep suffering from foot-and-mouth disease or foot-rot.

Re-examined—Professor M'Call, on his visit to Ellisland, did not see the 25 sheep left in the field at Carsemains. They were lamer than the lot examined by Mr. M'Call. Although he passed the field on his way from the station, he did not go in to look at the sheep. Did not know his reason for not doing so.

James Harkness, police-constable, Dunscore, received a note from Sergt. Stevenson on 27th January, stating that there were 256 sheep at Carsemains, belonging to Mr. Kennedy, affected with foot-

and-mouth disease, and he was asked to pay attention to them. Have previously seen sheep affected with foot-and-mouth disease. A good many of Mr. Kennedy's sheep were lame. Saw the sheep again on 29th and 30th January, and on 1st February, when they were being removed to Ellisland. He followed behind the sheep the whole way to Ellisland, and his impression was that they were affected with foot-and-mouth disease. Saw Mr. Paterson on 3rd February, and pointed out the sheep that had been driven along the road. They were still lame. He saw them again on 11th February, in company with Sergeant Stevenson, Professor Williams, Edinburgh, Mr. Paterson, and Mr. M'Intosh. They first examined the 25 sheep left behind at Carsemains, and then the lot at Ellisland on the same day. Mr. George Kennedy made the remark to witness that the sheep might travel a dozen miles. Was not aware whether he told them it was wrong to drive sheep affected with foot-and-mouth disease along the public road.

Cross-examined—About 40 of the sheep that were removed were limping, and in some cases he believed more than one foot was affected. Professor Williams' examination was first directed to the 25 sheep, out of which he examined three. Was not close to Mr. Williams when he was making his examination, and could not say whether he examined the whole of the feet and the mouths. Two or three of the flock at Ellisland were examined; the mouth of one and the feet of the whole were examined. Mr. Williams took the lead in the examination. Mr. Paterson did not examine any of the sheep that day. Mr. Williams would be engaged about an hour at both fields. Had not studied foot-and-mouth disease or foot-rot, nor had he ever acted as shepherd, his whole experience of the disease having been acquired since he joined the police force. Knew nothing of the scientific differences of the two diseases, nor had he ever examined the feet or mouths of sheep with the view of determining it.

Sergt. Stevenson, Dumfrieshire Constabulary, was a farm servant for ten years prior to joining the force, and worked among cattle and sheep. Was on duty in the neighbourhood of Carsemains on 27th January and saw Mr. Kennedy's sheep. A shepherd informed him he should go and see the sheep, and he found they had foot-and-mouth disease. He had frequently seen sheep affected with foot-and-mouth disease. There was a good deal of it at that time on the neighbouring farm. There would be about 100 of Mr. Kennedy's sheep diseased, but about 40 were worse than the remainder and were lying to the outside of the flock. Some of tham were very lame and could scarcely rise. Their backs were arched, and they had every appearance of diseased sheep—just such an appearance as he had seen in sheep very bad with foot-and-mouth disease. Saw the sheep again at Ellisland on 3rd February, in company with Mr. Paterson and last witness, but they were a good deal better than when he saw them last. The 40 that were separated from the rest of the flock at Carsemains did not appear to have been taking food for some time. Saw the sheep again on 11th February,

along with Professor Williams, Mr. Paterson and Mr. M'Intosh. The 25 at Carsemains were first examined, and the lot at Ellisland afterwards. They appeared to be a great deal better than when he first saw them. Thirteen years ago he had assisted in the management of cattle and sheep affected with foot-and-mouth disease, and had not the least doubt that this was that disease. Sheep affected with foot-and-mouth disease have a peculiar walk, which was visible in these sheep, as they walked with great difficulty. Have seen sheep suffering from foot-rot, but am quite satisfied this was foot-and-mouth disease. He drew his conclusions from their appearance —arched backs, tucked up in the belly, and when they moved it was just a stiff crawling along.

Cross-examined—Saw sheep at Courthill farm on 27th January, affected with mouth-and-foot disease. Mr. Nelson occupies the farm, but the sheep were not his. A great many of those sheep were affected. The owner of them was brought before the court on 3rd February this year. Courthill is distant about a mile from Ellisland. When Mr. Paterson examined the sheep he turned none of them on to their bottoms. At Ellisland, on 3rd Feb., the sheep were still very bad at walking, and had their backs arched, but they were nothing like what they were when he first saw them. They were not quite recovered on the 11th, and he had not seen them since. Suppose you had two sheep placed before you, one suffering from foot-and-mouth disease and the other from foot-rot, on what would you rely in fixing which had foot-rot and which foot-and-mouth disease?—In foot-and-mouth I would see the appearance on the whole body, and in foot-rot I would rely upon the feet. For foot-and-mouth disease he would examine the mouth, lips, and tongue, but would not hold it was foot-rot simply because there was nothing wrong with the mouth. What is the difference betwixt foot-and-mouth disease and foot-rot?—Sheep suffering from foot-and-mouth disease get off their food, become stiff, and can scarcely walk; foot-rot sheep go "hirpling" about as if their feet were sore. The arching of the back also distinguishes them. Have seen sheep suffering from foot-and-mouth disease where the affection did not extend to the mouth, and in fixing my opinion would rely upon the external appearance of the sheep.

By Mr. Barker—Did not examine the mouths of the sheep.

R. B. Paterson, V.S., inspector for the Local Authority, had had large experience of foot-and-mouth disease among cattle, sheep, and swine. Inspected Mr. Kennedy's sheep at Carsemains on 28th January, partly at the request of Mr. Kennedy himself, and partly at the instance of Mr. Sinclair, deputy-clerk of the Local Authority. Mr. Kennedy and Mr. Sinclair went along with him. The sheep were in a field on the farm of Carsemains. He got hold of and examined three of them. He found one with the crust torn from the top of the hoof about one-eighth of an inch. He showed this to Mr. Kennedy and Mr. Sinclair, and told the former he had no doubt whatever that it was foot-and-mouth disease from which the sheep were suffering. He also told him that if he had not reported them

to the Local Authority the sooner he did so the better. About 150 of the 257 sheep were affected, some of them very badly. They had a peculiar creeping, crawling motion, tucked up in the belly, and their backs arched, so that nobody who had seen the disease to any extent could be mistaken as to what they were suffering from. Saw no foot-rot about them in the ordinary sense of the term, but the feet were in a diseased condition as a consequence of the foot-and-mouth complaint. Examined the mouths of three of the sheep on the 28th January, and found nothing wrong with the mouth, but that was quite a common occurrence among sheep; cattle were more frequently affected in the mouth. With sheep the feet were always affected, and the mouth occasionally. Examined the 230 sheep at Ellisland on the 3rd February, and found that at least forty of them were very bad. The disease was unmistakable. Could tell it at a mile's distance if he was able to see the sheep.

By Mr. Brand—Are you serious?—Am perfectly serious; the peculiar action of sheep suffering from foot-and-mouth disease satisfies me sufficiently that they are affected without handling them.

Examination continued—Did not see the 25 sheep left behind at Carsemains on that date. The sheep are feverish in the earlier stages of the disease, which commences with an eruption of vesicles, and may form any way. They might have it in the back of the heal, and extending down to the coronet of the heal, then go round the coronet and in betwixt the digits. Usually the disease progresses round the top of the hoof, and the hoof very frequently comes off. Foot-rot was a parting of the under part of the sole, which was brought about probably by sand and dirt getting in and working its way into the sensitive part of the hoof, but it was not like foot-and-mouth disease. The two were quite distinct from each other. In the latter stages foot-and-mouth disease assumed the appearance more of foot-rot. Sand getting into the hoof caused it to separate, and consequently the hoof was detached. In the earlier stages of the disease it was quite easy to distinguish foot-and-mouth from foot-rot, but not in the more advanced stages. These vesicles were the characteristics of foot-and-mouth disease. He saw no reason why sheep could not be affected with both diseases at the same time. On 3rd February the sheep were much better. If the disease was in a mild form they sometimes recovered in a week or ten days, but if it was a severe attack, and the sheep were on turnip land, the disease lasted much longer. This was a severe attack, a number of the sheep being very ill—so much so, that in some cases the hoof was becoming detached, and appeared as if you had put it into a pot of boiling water. The whole of the 40 sheep he saw on the 11th were labouring under foot-and-mouth disease. He next saw them along with Professor Williams, Mr. M'Intosh, Mr. Jones, and Mr. Sinclair on the 11th of February. He did not examine them on that day, but he saw Mr. Williams make a most careful examination. Witness was satisfied what was wrong with the sheep from the first moment he saw them, and he had never

altered his opinion since. The sheep were a great deal healthier on the 11th, but even then the disease was quite apparent. He had known the disease in this country for 33 years, and had seen it largely within the last 10 years. The wool was not necessarily affected with the disease; it was the peculiar walk that was the chief characteristic of it. He examined three of the sheep from curiosity, and with one exception, he found nothing the matter with their feet. That one was affected inside the hoof, but it had not had time to break out. He did not require that examination of the sheep to satisfy him that they were suffering from foot-and-mouth disease. The walk was quite sufficient; they were stotting like india-rubber. He thought some of them would be ill for probably a month before he saw them. Those he saw on the 3rd February must have been ill on the 1st, when they were removed along the public road. Could not say that any of them had foot-rot; never saw sheep affected with foot-rot having the back arched. It makes them lame, but they have not the peculiar walk and dejected appearance of foot-and-mouth diseased sheep. Has had many thousands of sheep through his hands, and has thorough confidence in his own opinion. In the present case he would as soon doubt his own existence. He believed Professor Williams agreed with his opinion; knew foot-and-mouth disease was in the neighbourhood at this time.

Cross-examined—It was on 28th January that Mr. Kennedy asked him verbally to look at the sheep. He said, "There are some sheep of mine you will have to examine." Witness asked what for, and Mr. Kennedy replied, "For foot-and-mouth disease, I suppose." Witness said he was not instructed by the Local Authority to examine sheep, and if he did so, it would have to be at Mr. Kennedy's expense. The foot of the animal that he showed to Mr. Kennedy was conclusive evidence of the existence of foot-and-mouth disease, apart from the peculiar walk of the sheep. The crust of the hoof was parted about an eighth of an inch from the coronet right round, and he could have pulled it off as easily as a thimble from a woman's finger. Before ever he saw the feet at all, he had no doubt that it was foot-and-mouth disease. The examination of the sheep was supernumerary, but he thought he would like to see what state the feet of the sheep were in; a mere inspection of them by eyesight was, however, perfectly sufficient for him. On the 11th February he looked at the foot of only one of the twenty-five sheep at Carsemains. While Professor Williams and Mr. M'Intosh were examining the sheep, witness said to Mr. Jones and Mr. Sinclair, when one of the sheep rose, that if they could not tell that was foot-and-mouth disease they were of no use there, the evidence of it was so palpable and conclusive. He looked at the interdigital gland of the three sheep at Ellisland. Foot-and-mouth disease in the earliest stages was accompanied with fever, and was a highly contagious disease. Foot-rot was not considered a contagious disease. A sheep eating a turnip which had been partly eaten by foot-and-mouth diseased sheep would be sure to

catch the contagion. It was possible for sheep to affect cattle, and *vice versâ*, and for sleep to affect swine, and *vice versâ*. At Ellisland the land was gritty and not favourable to foot-rot. A soaking kind of land would be much more apt to produce foot-rot than that. The place at Carsemains where the twenty-five sheep were was not favourable to foot-rot. Did not observe other sheep at Ellisland close to Mr. Kennedy's. Supposing there had been healthy sheep near Mr. Kennedy's, there would have been danger either from contact or from eating each other's turnips. Mr. Sinclair asked witness to state the law on the subject, and he told him that no licence could allow diseased sheep to travel along the public road. They might travel on the farm from one field to another, and the healthy ones might be removed from the unhealthy. Mr. Kennedy said it was not so bad if he could remove the healthy ones, and witness told him to take care that he did not remove any that were unhealthy or unsound. Mr. Kennedy was entitled to remove the healthy sheep from the unhealthy, as the Local Authority had not at that time made any regulation prohibiting it. The Local Authority had made rules on the subject, but they were not in operation at that time. He had no rules to go upon further than the Act of Parliament, and it did not prevent him from removing healthy sheep. As the Act of Parliament did not prevent him, and the Local Authority had made no rules, upon what was Mr. Kennedy to rely in making the removal?—He was entitled to rely upon what I told him, and was right enough, if he had not removed diseased sheep.

By the Chairman—The Act of Parliament prevents him from removing diseased sheep along the public road. He may do so, however, within his own farm.

Cross-examination continued—The regulation made by the Local Authority prohibiting the removal of animals which had been affected, unless under license, had done a great deal of good, as he had not reported a single case since. Then why did you not make that regulation sooner?—That is not my business, sir; I am not the Local Authority. (Laughter.) It is not common in well marked cases of foot-and-mouth disease in sheep to find the mouth attacked.

Re-examined—Could pick out the healthy from the unhealthy sheep. There were no diseases in the foot that he knew that were distinguished by a vesicle or blister except foot-and-mouth. They did not form in foot-rot. In foot-and-mouth disease there were either vesicles or evidence of their having been there, but they could be easier seen in cattle. The time which elapsed between the 28th January and when he saw them again on the 11th February was sufficient to allow the disease to disappear. He would have a better opportunity of judging whether the sheep were affected with foot-and-mouth disease when he saw them on 28th January than a gentleman seeing them on 11th February. Soft, marshy, luxuriant meadows were apt to cause foot-rot. The fever generally lasts a few days, but the disease sometimes extends over two months. Supposing he had not seen the sheep till the 11th February their

appearance even then was quite sufficient to convince him that it was foot-and-mouth disease.

Re-cross-examined—In the sheep which he examined he observed no vesicular eruption in the hoof.

By the Chairman—When he told Mr. Kennedy on the 28th that the sheep were suffering from foot-and-mouth disease, he did not dissent from witness and say they were not.

Re-cross-examined—Mr. Kennedy asked how witness could tell the difference between foot-and-mouth disease and foot-rot. He said it was quite easily seen, and he was satisfied that this was foot-and-mouth, and that he should report it at once. Did not refuse to explain to Mr. Kennedy the difference between foot-and-mouth and foot-rot. Don't know whether Mr. Kennedy said it was impossible to tell that it was foot-and-mouth disease without examining the mouth, but if he did would most likely say that it very frequently was not in the mouth at all.

Professor Williams, principal of the New Veterinary College, Edinburgh, consulting veterinary surgeon for the Highland and Agricultural Society of Scotland, and consulting inspector for the county of Midlothian, has had great experience of foot-and-mouth disease both in cattle and sheep in this country, and of foot-rot in Australia. Have seen many thousand cases of foot-and-mouth disease. He visited Mr. Kennedy's sheep on 11th February, at the request of the Local Authority, in company with Mr. Paterson, Mr. M'Intosh, Mr. Jones, and two policemen. He found that foot-and-mouth disease was the matter with the sheep; had no doubt whatever of that. They appeared to him to have been suffering for some time. Some were recovering which had been suffering for several weeks, and others were more recently attacked. Some of the 200 at Ellisland were quite as bad as the twenty-five at Carsemains. The ground on which they were kept was against a rapid recovery from the disease. He handled three of the twenty-five sheep and two of the other lot, and found in the feet of them all marks of murrain, and in the mouth of one the appearance of a blister having been there. That was indicative of foot-and-mouth disease and nothing else; could not possibly have been foot-rot. The usual appearance of the foot is a separation of the coronet from the upper part of the hoof, and marks near the heel of where blisters have been. The vesication stage was past, but he saw traces of where the vesicles had been. Found an appearance of foot-rot in one case among the twenty-five sheep, and that same animal was also labouring under foot-and-mouth disease at the same time. It had foot-rot in one foot. The sheep were in various stages of the disease. Some were suffering from fever, were small in the belly, not feeding, and lying down continuously, while others were recovering and suffering only from lameness. In the first stages the back is arched, the animal lame in all its feet, and moves about in a peculiar manner, quite different from the lameness in foot-rot. It was very seldom, indeed, that sheep were lame in all feet from foot-rot. In the whole of the sheep they examined all

the feet were affected. Foot-rot commences at the lower part of the foot and works upward. In foot-and-mouth the disease first appears at the corner or upper part of the hoof, and if kept on dirty land dirt would insinuate itself between the horn. Mr. Paterson was in the field when witness made this examination, but he did not interfere with him. Had been an inspector since the cattle plague broke out in this country. The following report was then read:—

"The New Veterinary College, Gayfield, Edinburgh, Feb. 13th, 1875. Capt. Jones, C.C., County Constabularly, Dumfries.—SIR, —I hereby certify that the two lots of sheep—one on the farm of Carsemains, and the other on Ellisland, in the parish of Dunscore—are suffering from 'the foot-and-mouth disease' in various stages. Some of the sheep are now almost recovered, whilst they are still very lame from the effects of the disease, and some few of them are still in the less advanced stages. On the farm of Carsemains I saw 25 sheep, and, along with Mr. M'Intosh, V.S., Dumfries, caught and examined three of them, all of which had unmistakable signs of the disease—two of them in the feet only, and one in the mouth and feet. At Ellisland about 230 sheep were shown to us, and, as near as I could judge, about one-tenth of these were lame. We caught two of them, and found the disease to be foot-and-mouth. I may say that I was asked to say whether the disease was 'the foot-and-mouth disease' or the 'foot-rot,' and to give my opinion according to my finding, without reference to any parties concerned, and I unhesitatingly stated the disease to be 'foot-and-mouth disease.'—I remain, Sir, your obedient servant, (Signed) WILLIAM WILLIAMS, F.R.S.E., &c."

That is a correct report, and I have still no doubt whatever that it was foot and mouth disease from which the sheep were suffering.

Cross-examined—He considered that a man of experience, at the first glance, would be able to tell the difference between foot and mouth disease and foot rot, without an examination of the feet and mouth. Foot rot was a disease due to local causes, such as soil and weather. Foot and mouth was a highly contagious disease. How does the contagion spread?—That is a puzzle; I only wish I could tell you. Would you expect it to spread where healthy sheep ate turnips after diseased sheep?—Most certainly; I would expect it to spread if healthy sheep were mixed along with the diseased flock, or where a diseased flock had been. There were diseases in horses and cattle similar to foot rot, but it was more common to sheep. In sheep they might or might not find the affection of the mucous membrane in foot and mouth disease. Wet, gritty soil was favourable to the production of foot rot. There was a vesicular eruption in the first stages of foot and mouth disease, but not in the case of foot rot. Did not find vesicles in any of the sheep examined at Ellisland, but found marks where they had been. They examined the worst of the sheep at Ellisland because they were more easily caught. The examination of the three sheep was sufficient to satisfy him that the whole flock was affected. There were some cases of foot rot in which the bones became affected, and no man could tell

the original cause. The sheep were in moderate condition. He did not find any of them affected in the joints or the supernumerary digits, and only one of them in the mouth. The appearance of the mouth was a red spot on the tongue. There was no matter upon it; the blister had burst and left a raw spot, which was in process of healing. Could not have been the result of an accident, because it was circular. Did not think it necessary to wash the feet of the sheep when examining them, and examined them in the open field. He was sure from the appearance of their bellies they had not a good appetite. The sheep ran very badly when hunted, almost creeping along.

Re-examined—A characteristic of foot rot was fungus, but there was no fungus in the sheep he examined. The absence of fungus was evidence of foot and mouth disease being present. Foot rot often followed foot and mouth disease. Could detect the disease quite easily in the field and much better than if the sheep had been collected in a shed.

Re-cross-examined—Saw evidence of exfoliation at the heel.

By the Chairman—Saw symptoms of foot rot in one of the 25 sheep, but did not find it in any of the larger lot.

A. J. M'Intosh, V.S., Dumfries, has had 14 or 15 years' experience, and has seen a great many cases of foot and mouth disease in cattle, sheep, and swine. Examined Mr. Kennedy's sheep along with Professor Williams on 11th Feb. He handled several of the sheep. He accompanied Professor Williams, but made an independent examination for himself. Found no vesicles in the mouth, but the appearance of a blister in one. He did not attach much importance to that, as he found symptoms in the movement of the sheep and the appearance of the feet sufficient to convince him that it was foot and mouth disease. A good many of them were lame in all the feet. He found undoubted evidence of the vesicles having been formed, but they had all burst, so that the sheep must have been ill for some considerable time. He had not the slightest doubt that it was foot and mouth disease, and made the following report:

"Dumfries, 11th Feb., 1875.—I hereby certify that I have this day, at the instance of Mr. John Jones, examined two lots of sheep (said to belong to Mr. Thomas Kennedy) specially for foot and mouth disease—one lot of 25 on the farm of Carsemains, the other of over 200, on the farm of Ellisland, and in my opinion some of the sheep in both lots are suffering from murrain, or what is commonly known as foot and mouth disease.—(Signed), A. J. M'Intosh, M.R.C.V.S."

Has a farm of his own, and has had sheep on it affected with foot-and-mouth disease. Mr. Kennedy had foot-and-mouth disease among the cattle in January last. When he inspected the sheep in February they appeared to be recovering.

Cross-examined.—The sheep he saw with the lesion on the mouth was also seen by Professor Williams. The mouth was hot and slightly inflamed. He examined the mouths of five sheep in the one lot and of two in the other, and found nothing wrong with the

mouths of any except that one. To his mind it was quite conclusive, as it was not a necessary symptom that they should be affected in the mouth. He formed his opinion from the peculiar movement of the sheep and the appearance of the feet. Did not think he ever made a mistake in distinguishing between foot-and-mouth disease and foot-rot. May not the inflammatory action account for the appearances found in the coronet?—No; because if it had been foot-rot there would have been fungus. Fungus was an abnormal growth of the tissues. Saw no vesicular eruption in the seven sheep he examined. Would you have expected to find vesicular eruption if you had extended your examination?—No, I would not; but if called in earlier I might have found it. Some of the sheep at Ellisland were in fairish condition. Foot-and-mouth disease was highly contagious and might be spread in many ways. He would expect it to affect sheep mixing with diseased animals. Making a *post-mortem* examination, he would expect in foot-and-mouth disease that the interdigital gland would be inflamed, but in foot-rot it might not be affected at all.

This closed the evidence for the prosecution, and witnesses for the defence were then called.

Professor James M'Call, principal of the Veterinary College, Glasgow, which post he had held since 1862, and been 18 years devoted to veterinary inquiries, examined by Mr. Brand, said he had three assistants under him and held the office of inspector in connection with the slaughter-house in Glasgow. He was also one of the Privy Council inspectors, and had been engaged in farming for 11 years. Has occasion to pay particular attention to Irish and foreign imported animals, which came into Glasgow in very large numbers, and which were not allowed to leave the steamer until examined either by himself or his assistants. All the sheep exhibited in the Glasgow cattle market came under his notice, and these were reckoned at many thousands yearly. Has turned over as many as 1600 sheep in one year on his own farm, which is situated about five miles from Glasgow. Knew no one in Scotland who had a larger experience in foot-and-mouth disease and foot rot. Received a telegram from Mr. Kennedy on the 6th February asking him to meet him at Auldgirth station to examine some sheep. Was not aware that he had ever seen Mr. Kennedy before he met him at Auldgirth on the 8th Feb. He drove him to Ellisland and pointed out upwards of 200 sheep which he said he wished him to examine and tell him if they had foot-and-mouth disease or if they showed symptoms of having had it recently. The sheep were driven into a shed on the farm steading, the shed being packed full and the remainder sent round to the back of the stackyard to be in readiness. He then proceeded to examine the four feet and the mouths of each sheep while a man was holding it. He had examined about 50 sheep in this way, when Mr. Kennedy made the remark that if he was going to examine them so minutely it would take him all night; to which witness rejoined that if he wished his opinion he must be allowed to have his own way, and he continued to examine

the sheep the same manner as before. He would examine about 80 of the first lot individually, and he passed the remainder before him in sixes, and pointed out all the sheep which were lame, and the man seized them and had them examined. In this way he examined the whole of the lame sheep. He then examined the second lot in the same manner, and would examine about 130 in all. Found appearances of foot-rot in all its stages, but failed to observe any indication of foot-and-mouth disease. Foot-and-mouth disease was an eruptive fever produced from blood poisoning. The local changes were confined to the coronet and interdigital space. Similar eruptions took place on the tongue and sometimes on the lips and gums, but it was slightly different in sheep from cattle. In cattle they would almost invariably find that the disease was not only in the feet but also on the tongue, while in sheep that did not hold good as a rule. He would, however, in a flock like what he had examined, have expected, from the disorganised state of the feet, to find some cases in which the mouth was affected if the disease had been foot-and-mouth. No man was entitled to say that they were suffering from foot-and-mouth disease unless he found vesicles present, or appearances of there having been there. He got one of the Carsemains sheep and one of the Ellisland lot killed yesterday, and had the feet of these sheep with him and also the feet of sheep affected with foot-and-mouth disease, killed in Glasgow. Professor M'Call then produced feet showing the disease in its primary state and the red appearance of the membrane at the root of the heel after the vesicle had burst, He next exhibited the feet of a sheep which had the disease in December, showing the separation of the hoof at the heel. The inside of the clouts was perfectly healthy, and that was the favorite seat of foot-rot. Witness next showed the feet of a blackfaced wether, affected with foot-rot, killed at Carsemains yesterday. The toes, he said, were ready to come away, showing that foot-rot had existed so far back as to enable new horn to grow from the coronet downwards. That growth could not, under any circumstances, take place in less than two months. He next produced the feet of a whitefaced sheep, killed at Ellisland, and said they would observe the whole of the feet were affected with foot-rot. He had no hesitation in saying that he could pick out half of the animals with the same result. Foot-and-mouth was a febrile disease, and foot-rot was not. The earliest symptoms of foot-and-mouth disease were in the heel; they could do nothing to check the disease; it must run its course. After the vesicular stage had passed, if the feet were not kept dry, inflammation commenced at the coronet and extended down to the toe. Foot-rot commenced in the interdigital space, but by taking the disease in its earliest stages and applying stringent lotions, it might be stopped. In foot-and-mouth disease there was an almost total want of appetite, while foot-rot sheep had a tolerable appetite. The flesh of an animal suffering from foot-and-mouth disease wasted away, and it would be a very lean sheep in a fortnight. This was caused by the fever. In foot-and-mouth disease there was almost always an under-running at

the heel, but it was not so in foot-rot. If the sheep he examined had had the foot-and-mouth disease a fortnight before he saw them, they would on the 8th have exhibited sufficient evidence to show that they had had the disease. The result of his examination of the sheep was to come to the opinion that they were suffering from foot-rot, and foot-rot alone. They were not suffering from foot-and-mouth disease, nor had they the appearance of having suffered from that disease recently. Did not see the 25 sheep at Carsemains. Did not think the examination of three or four sheep sufficient on which to form a correct opinion of the nature of the disease, and would not think an inspection of the sheep without looking at the feet and mouth sufficient material on which to form an opinion. Would not consider lameness with arched back sufficient proof of the existence of foot-and-mouth disease. If Mr. Kennedy's sheep had had foot-and-mouth disease he would have expected the sheep immediately contiguous to them to have caught the disease, and would certainly think that cattle eating turnips that had been partly eaten by diseased sheep would have caught the infection. It was not necessary for sound animals to come in contact with diseased animals to get the infection; the shepherd might carry it. Again saw the sheep at Ellisland and Carsemains yesterday, and had them all passed before him, and two or three of them caught and examined. He found them still suffering from foot-rot, but saw no indication of foot-and-mouth disease. He had not the shadow of a doubt in his mind that the disease from which they were suffering was foot-rot and nothing else.

By Mr. Johnstone of Bodesbeck.—The sheep killed yesterday were fair specimens of the lame sheep that were in the flock.

Examination continued.—Would a circular sore, partly healed, on the tongue of a sheep, be any indication of foot-and-mouth disease?—No; other things might cause the injury to the sheep's tongue; the animal laying hold of anything sharp would irritate the tongue. Professor M'Call then exhibited the cast of the tongue of a sheep suffering from foot-and-mouth disease, with a red spot on the tongue and again explained the nature of the disease.

Cross-examined by Mr. Johnstone.—Foot-rot sometimes followed foot-and-mouth disease, but they might have the two diseases together. The sheep he saw on the 8th February could not have been suffering from foot-and-mouth disease on the 3rd. Foot-and-mouth disease has first of all its eruptions at the top of the hoof. Shown feet of the sheep killed at Ellisland yesterday.—Are there not remains of vesicles in any of these feet at the top of the hoof?—Witness examined the feet minutely and said he could find no traces of vesicles. He was requested by the counsel for the prosecution to re-examine them, but he still said he was unable to find any trace of vesicles. Mr. Johnstone then handed one of the feet to Mr. Paterson, who was in court, and who at once pointed out what he considered were the remains of vesicles. The feet were again handed to Professor M'Call, who, after examining them, said there was no trace of vesicles having been there. He was prepared to swear to the

best of his knowledge as a professional man that those sheep were not affected with foot-and-mouth disease, nor had they been for at least two months, and also that they must have been bad with foot-rot for three months. It was impossible that the sheep could have had an attack of foot-and-mouth disease within three weeks of his seeing them and not the slightest trace of abrasion or any of the characteristics of the disease when he saw them. He would not take it upon himself to grant a license to remove or condemn sheep without handling them. Sometimes one foot was affected and sometimes the whole, the one case being quite as frequent as the other. Have found the two diseases combined. If the disease was introduced into the herd when they were suffering from foot-and-mouth they could only have one, but if introduced when the herd were affected with foot-rot they might have both diseases. It takes some time for foot-rot to follow foot-and-mouth disease; could not have foot-and-mouth to-day and foot-rot to-morrow.

Re-examined—The grounds at Carsemains was very favourable to foot-rot. Had examined the supernumerary digits of some of the sheep, and found no indication of foot-and-mouth disease. If a sheep was suffering from foot-and-mouth disease on the 11th Feb., would expect to find symptoms of it on the 8th.

By the Chairman—When he visited the sheep he was not aware that they were under any restriction whatever, nor was he told that they had been examined some eleven days previously by the Inspector for the Local Authority. He was in total ignorance at that time. He drove into Dumfries that night with Mr. Kennedy and they went to the White Hart Hotel, where he was introduced to Mr. Sinclair, who asked in his hearing "what Professor M'Call thought." Mr. Kennedy replied that witness believed it to be foot-rot. Mr. Sinclair said it was very strange that he and Mr. Paterson should differ. Witness then learnt for the first time that the sheep had been examined by Mr. Paterson, and he expressed his determination to see Mr. Paterson before he left Dumfries, but on a message being despatched to him it was found that he was not in town. Witness waited until the late train that night in the hope of seeing Mr. Paterson, but had to leave without doing so. He had no preconceived idea whatever. He thought when he was going to the farm steading that it was to examine a horse, as it was generally for horses they were brought such a distance.

Professor Thomas Walley, principal of the Veterinary College, Edinburgh, had been so since September last, and had been connected with the college as a lecturer for about four years. Was professor of pathology to the Highland and Agricultural Society of Scotland, and had an experience extending over 18 years in foot-and-mouth disease and foot-rot in England, Scotland, and Wales. Was sent for to examine some sheep at Ellisland and went there on the 11th Feb. along with Professor Fordie, Glasgow. Saw the sheep in a field and had them driven into a shed, where he examined the feet and mouth of each sheep. He examined over 40, and found them suffering very badly from foot-rot. They were not febrile, and

none of them whatever were suffering from foot-and-mouth disease. There was no evidence of vesicular eruption at the hoof or the coronet, nor had there been any for at least ten weeks or three months. None of the sheep presented the external appearance of foot-and-mouth disease except the lameness. The ground was favourable to the production of foot-rot. Could not conceive of any mistake being made between the two diseases. The appearances he found round the coronet were amply explained by the dirt working its way up to where the coronet is. The inside of the foot was ulcerated and presented the usual appearance of foot-rot. Would expect sheep in contiguity with diseased sheep to become affected, and cattle eating turnips after diseased sheep would also become affected. That was a common method adopted to propagate the disease. In foot-and-mouth disease there was always a secretion, but in this case he found no trace of it whatever. On dry ground the animals were able to move with reasonable celerity, there being no shortness of breath, nor were the sheep panting. Would certainly not consider it a sufficient means of judgment to look at the external appearance of the sheep without further examination. There was exfoliation of the heel and new hoof formed in a great number of them. Had not the slighest doubt that they were suffering from foot-rot, and not from foot-and-mouth disease.

Cross-examined—At one time, you were assistant to Professor Williams?—In a sense I was. I was partner with him. Give me an instance in which cattle have caught the disease from sheep?—I cannot recall to my mind an instance, but I know it is quite a common occurrence. Am perfectly certain these sheep were not suffering from foot-and-mouth disease. Can you explain how Professor Williams and you differ in the examination of the same sheep?—I cannot; I dont know any gentleman's reasons for his opinions.

Re-examined—Supposing the sheep at Ellisland to have been separated from the sheep at Carsemains, and the sheep at Carsemains to have been suffering from foot-and-mouth disease, would you expect the sheep at Ellisland to be affected with the disease?—Certainly; and sheep associated with them would be sure to have the disease.

Re-cross-examined—None of the sheep had empty stomachs. An animal lame in one leg will always arch its back. Never considered that these sheep had any symptoms of foot-and-mouth disease, and never said so to any one.

By the Chairman—Did not see the 25 sheep at Carsemains. Was told on the 11th, after his examination of the sheep, that they had been examined by the Inspector for the Local Authority, and that it was disputed whether they were suffering from foot-and-mouth disease or foot-rot, but did not know at the time.

Professor William Fordie, lecturer on anatomy in the Glasgow Veterinary College, had been connected with anatomy for about fourteen years, and was a Fellow of the Royal College of Veterinary Surgeons in London. Visited Ellisland on the 11th February along

with Professor Walley to examine some sheep. Examined about fifty, and found them suffering from foot-rot, the majority of them being very aggravated cases. Some of them must have been affected for two or three months at least; but found no indication whatever of foot-and-mouth disease. Have examined disputed cases in the pens at Glasgow cattle market, and had always been able to tell the difference between foot-and-mouth disease and foot-rot. A conjecture might be formed as to the nature of the disease without handling the sheep, but to speak positively it would be perfectly ridiculous to form an opinion from the way the sheep walked, without examining them. He examined the sheep for himself, and left Professor Walley without knowing definitely what his opinion was; each arrived at his own conclusions from an independent inquiry. The result of his examination was that in no instance did he find any vestige of foot-and-mouth disease, and no appearance of the sheep having suffered recently from it, but he found foot-rot in various stages. The ground on which the sheep were was favourable to the exaggeration of foot-rot, and he did not think the sheep would get well on that land. If the sheep at Carsemains had been suffering from foot-and-mouth disease when the Ellisland lot were removed, he would have expected the disease to spread throughout the whole flock. Cattle eating half-eaten turnips after diseased sheep would also become affected. Had seen the disease spreading from cattle to sheep and from sheep to cattle. He thought it would spread indiscriminately among cattle, sheep, or swine.

Cross-examined—He knew two or three cases in his experience where cattle had got the disease from sheep. Had the disease been foot-and-mouth there would have been marks of the remains of ulcers, but he saw nothing of the kind on the sheep which he had examined. Did not think these sheep could have been affected with foot-and-mouth disease within the last ten weeks. They were in fair condition, and seemed to be feeding well.

By the Chairman—Before he left Glasgow on the 11th he knew these sheep were suspected to have foot-and-mouth disease. Was aware also that Professor M'Call had examined them, and knew his opinion.

John Tait, V.S., Annan, who had eighteen years' experience, examined about thirty sheep at Ellisland on 20th February, and found them suffering from foot-rot in various stages. Was quite certain the disease was foot-rot and not foot-and-mouth.

Adam Hunter, ploughman to Mrs. Williamson, Carsemains, said Mrs. Williamson had a number of sheep at present, and had the same sheep about the end of January and beginning of February. They were in close proximity to Mr. Kennedy's sheep, being in an adjacent field. Mrs. Williamson's sheep sometimes ate of the turnips which had been half eaten by Mr. Kennedy's sheep, and they never had foot-and-mouth disease nor foot-rot. The turnips which had been half eaten by Mr. Kennedy's sheep were given to Mrs. Williamson's cattle and swine, and none of them had become diseased.

Mrs. Williamson, Carsemains, said she let her turnips to Mr. Kennedy at 6d. per week. The remains of the turnips were taken off for her cattle and swine after they had been partially eaten by Mr. Kennedy's sheep. There was just a small fence consisting of nets and bars betwixt her sheep and Mr. Kennedy's, and the sheep could smell each other perfectly well. Her sheep were not affected with foot-and-mouth disease this year.

Robert Williamson, Carsemains, son of last witness, gave similar evidence.

Hugh Mitchell, farmer, Ellisland, said he had sheep at Ellisland during January and February. They were in a field adjoining that in which Mr. Kennedy's were, being separated by a hedge. His sheep had been free from foot-and-mouth disease and foot-rot this year, and had taken no complaint from Mr. Kennedy's sheep which came on 1st February. The shed in which Mr. Kennedy's sheep were examined belonged to witness, and his sheep had since been twice in that shed, and they exhibited no symptoms of disease of any kind.

Thomas Henderson, father-in-law of last witness, and residing with him at Ellisland, also deposed to their sheep having been free from disease during the year.

This finished the evidence, and parties then addressed the Court.

Mr. Johnstone said this was a most extraordinary case, and the evidence at first sight did appear very conflicting, but on behalf of the public prosecutor he had to submit that he had done his duty in bringing it before the Court, and that in reality, although there was apparent contradiction, he had proved his case and was entitled to ask for a conviction. They had the important fact that Mr. Paterson, the gentleman who advised the Local Authority, and who held a very responsible situation in the county, had seen these sheep on 28th January, before any of the witnesses examined on behalf of Mr. Kennedy, and he then assured Mr. Kennedy that these sheep were affected with foot-and-mouth disease. He need not say that Mr. Paterson was probably one of the most skilled men we had in that department of knowledge, and he had no difficulty in deciding what was wrong with the sheep. Mr. Kennedy himself seemed to be pretty well satisfied with this fact, for the very next day he reported that he had some sheep affected with foot-and-mouth disease. If they were satisfied that these sheep were then so affected they need not trouble themselves with the evidence by those gentlemen from Edinburgh and Glasgow as to the latter date. Shortly after reporting the case, Mr. Kennedy committed the offence charged by driving 231 of these sheep about a mile along the public road. After quoting from the Act to show the nature of the offence, Mr. Johnstone said the first question they had to ask of themselves was—Were these sheep labouring nnder foot-and-mouth disease on 29th January and 1st February? They had had the evidence of Mr. Paterson, Mr. M'Intosh, Professor Williams—the very highest authority, he believed, in these matters in Scotland—and Sergeant

Stevenson, all of whom spoke most distinctly to the fact that the sheep had that particular disease. Against that they had the evidence of Professors Walley, M'Call, and Fordie, and Mr. Tait, but they must observe that they were seen by nobody till the 8th, a week after the offence was committed. There was certainly a very singular conflict of evidence. Professor Williams said these sheep had their backs arched, a dejected appearance, and were off their food; while the other gentlemen who saw them on the same afternoon said they were sound, healthy sheep, and not off their food at all! It was most extraordinary, and he did not know how to reconcile it, unless there was some mistake about the identity of the sheep. There was no doubt, from the evidence, that Professor Williams examined the same sheep that were seen on the 28th January, but there was no proof of what sheep Professors Walley and Fordie had examined, as Mr. Kennedy had above 200 sheep in the field at Ellisland. What he asked them to consider was—Did they believe Mr. Paterson that when he saw these sheep on 28th January they were diseased? If they believed the evidence of those witnesses adduced on behalf of the prosecution, he thought they must come to the conclusion that on the 1st February the sheep were driven along the public road while suffering from foot-and-mouth disease. Mr. Kennedy could not plead ignorance of the disease, because he had been informed by Mr. Paterson, the proper authority, that the animals were diseased, and it was therefore a rash act on his part to cause the sheep to be moved along the public road. With these remarks he left the case in their honours' hands.

Mr. Brand followed on behalf of defender. The case, he said, was one of great importance to Mr. Kennedy, who was a most respectable farmer in the county, and the court had given it every consideration. Before, however, they could convict they must be clear that Mr. Kennedy had moved those sheep in the guilty knowledge that they were suffering from foot-and-mouth disease. They had to arrive at their conclusions wholly from scientific opinion, and there were two courses open to them—either to hold that the defence had been established and Mr. Kennedy was entitled to be acquitted, or, looking to the conflict of evidence, give him the benefit of any doubt that might exist. Mr. Kennedy, in his letter, did not say his sheep were suffering from foot-and-mouth disease, but that Mr. Paterson had told him so. He was the man who brought Mr. Paterson upon the field, and he made no endeavour to conceal the disease. In that letter, therefore, he offered no expression of his opinion, but afforded the authorities an opportunity of making such inquiry as they deemed desirable, and he would pause for a moment to consider what was the nature of the inquiry made by Mr. Paterson. He did not doubt Mr. Paterson's sincerity; indeed, he had reason to believe that he was both an experienced man and an honest witness, but he believed that in this case he had come to a rather rash conclusion. In the first place, Mr. Paterson did not make by any means a complete examination of the sheep; all the witnesses for the defence said that such an examination was, to say

the least of it, insufficient. In the next place, Mr. Paterson said that he could judge of foot-and-mouth disease at a mile's distance, if he could see the sheep. That was a statement which he for his part must hesitate to believe, and he mentioned it to show how ready Mr. Paterson's mind was to arrive at the conclusion that it was foot-and-mouth disease. Undoubtedly his evidence was supported by Sergeant Stevenson and Professor Williams, but the former was not a scientific man, and not well qualified to distinguish between foot-and-mouth disease and foot-rot, and therefore he could not ask them to attach much importance to his evidence. Professor Williams, no doubt, said the sheep were suffering from foot-and-mouth disease, but he also, and he said it with all deference to him, was rather hasty in coming to a conclusion. He only examined some six of the sheep altogether, and did not take them into a shed where he could have had complete control over them, and he found no evidence of disease in the mouth except in one case where the tongue of the animal had the appearance of a sore somewhat healed. Mr. M'Intosh said he would not conclude from that appearance that the sheep were suffering from foot-and-mouth disease; but Professor Williams accepted that appearance as confirmatory of the view that the sheep were so affected. He would ask them to believe the statements made by the witnesses for the defence, that in well marked cases of the disease the mouth would be found to indicate some evidence of its appearance. His friend Mr. Johnstone had not impeached the sincerity of his witnesses, and from what he knew of him he would not have expected that he would. In the first place they had Professor M'Call, a gentleman of equally high standing with Professor Williams, and he did not wish to place him any higher. Mr. M'Call did not know Mr. Kennedy, and had no reason to favour him. He was sent for by telegram, which might have been a hoax, but he accepted it as *bona fide* and came to Ellisland and examined the sheep. His examination was more careful, more extended, and more minute than that of either Mr. Paterson or Professor Williams, and he found well developed instances, in nearly all the sheep, of foot-rot, but in no case the appearance of foot-and-mouth disease. The evidence of Professors Walley and Fordie went entirely to confirm that of Mr. M'Call. It had been suggested that the conflict of evidence was explained by the witnesses for the defence and those for the prosecution having seen different lots of sheep, but no evidence had been adduced to that effect, and it was not said that Mr. Kennedy had any other sheep at Ellisland and Carsemains than these, or there might have been some ground for the suggestion. His friend had never asked a single question with the view to bringing that out, and he could only imagine that he had lighted on that defence because he could not find a better. It had also been suggested as a point on the other side that the witnesses for the prosecution saw the sheep both at Carsemains and Ellisland, while those for the defence only saw the sheep at Ellisland, but having proved on all sides that foot-and-mouth was highly contagious, he thought the conclusion was irre-

sistible that if the sheep at Carsemains were suffering from that disease, those at Ellisland would have taken it along with them and spread it there, so that the evidence of Professors Walley, M'Call, and Fordie, as to the sheep at Ellisland, must be taken as applying also to the sheep at Carsemains. But his case did not rest on the conflict of scientific evidence. He had facts to go upon such as his friend had not in his case from beginning to end. Admitting the highly contagious nature of the disease, was it not the fact that sheep in the immediate vicinity would take that disease? But Mrs. Williamson's sheep and cattle had never had the disease, and were at the present time quite healthy. Mr. Brand concluded by saying that he left the case in the hands of the bench, with every confidence that they would arrive at a result favourable to Mr. Kennedy.

Mr. Johnston of Cowhill and *Bailie Rennie* having left the bench during the trial, the remaining eight justices retired, and after a quarter of an hour's absence returned into Court, when the chairman gave the decision arrived at.

Mr. Witham said—This is a charge againt Mr- Kennedy of having moved a certain number of sheep along the public road on 1st Feb., when suffering from foot-and-mouth disease, and the question we have to determine is whether that charge has been established or not. In dealing with the matter, I may just give a short *résumé* of the evidence. The first we hear of the case is on the 27th Jannary, when Sergeant Stevenson saw the sheep, and he says that in his judgment they were suffering from foot-and-mouth disease. Acting on that opinion, he reported the case to the chief-constable and to the Local Authority, with this result, that on the following day, the 28th January, Mr. Paterson, the inspector for the Local Authority, at the request of Mr. Kennedy, and also on the direction of the Local Authority, visited the sheep. Mr. Paterson—who has had an experience extending over 33 years, and is unquestionably a man most competent to form an opinion upon such matters—distinctly states that he found the sheep suffering from foot-and-mouth disease. Being pressed upon the point as to whether he has any doubt of it, he swears most emphatically that he never had the slightest doubt on the matter—that he was as sure as he was of his own existence that these sheep were affected with foot-and-mouth disease on 28th January, and that in consequence of that conviction on his part, he recommended Mr. Kennedy to report them as being affected to the Local Authority. On that same day, and in consequence of the visit of Mr. Paterson, Mr. Kennedy did report his sheep as being affected with foot-and-mouth disease; at least he says in his letter that "he was so informed by Mr. Paterson." It was a most extraordinary proceeding, under these circumstances, that Mr. Kennedy, as far as the evidence goes, took no advice whatever to show that Mr. Paterson had made a mistake in holding the disease to be foot-and-mouth. Mr. Kennedy, not having even objected to that view of the matter when Mr. Paterson saw the sheep, takes it upon himself, on the fourth

day after Mr. Paterson's inspection, to remove 231 of these sheep along the public road. Now, if at the time these sheep were affected with foot-and-mouth disease, he, undoubtedly, was guilty of the offence charged; but if, on the other hand, they were suffering, as has been suggested for the defence, from foot-rot, of course no offence whatever has been committed. The question, therefore, still remains for us to determine—Which of these two diseases were these sheep suffering from? We must accordingly look to the next piece of evidence, which is that Mr. Paterson, on 3rd February—I suppose on the instructions of the Local Authority—two days after the sheep had been moved, goes up again to look at the sheep, and, after a careful examination of them—or at least such an examination as was satisfactory to him as a man of vast experience—arrives again at the conclusion that he had made no mistake, and that they were still suffering from foot-and-mouth disease. The next thing we hear of the matter is a visit by Professor M'Call, of Glasgow, on Feb., on behalf of defender, but I must point out the great distinction between the evidence given on the one side and the other is this—that really up to the 8th February we have the evidence of Mr. Paterson alone as to the state of these sheep on the 1st Feb., when they were moved, and to my mind we have the unrebutted evidence of Mr. Paterson, speaking up to 8th February, that those sheep were suffering from foot-and-mouth disease. No attempt was made by the defender till 8th February to break down the opinion of Mr. Paterson. Indeed, Mr. Kennedy, for a period of eleven days, seems to have acquiesced entirely in the opinion expressed by Mr. Paterson on the 28th January, and re-expressed by him on 3rd February. It is not till 8th February that defender takes steps to bring down these learned professors from Edinburgh and Glasgow, who have given their evidence here to-day. I must say—whatever may be the value of the evidence of those gentlemen—that there is this always to be borne in mind, that they did not see these sheep till eleven days after they had been pronounced by Mr. Paterson as suffering from foot-and-mouth disease. In these circumstances it has appeared to some of the justices that the matter should fall to be determined simply upon the evidence before us as to the state of the sheep on 1st Feb., and the evidence before us on that point is simply the evidence of Mr. Paterson. But by a majority of 5 to 2 the bench is of opinion that, notwithstanding Mr. Paterson's long experience and competency to pronounce upon the nature of the disease, he has been mistaken in the present case. They are of opinion that the disease these sheep suffered from has not been proved to be foot-and-mouth, but foot-rot. I beg to say that I am not of the majority. I form one of the minority, and did not concur in that opinion, but it is my duty to deliver it. The complaint is accordingly dismissed. (Applause.)

Mr. Kennedy of Dalmakerran, not having heard the whole of the evidence, declined to vote.

The Court then rose, after a sederunt of six hours.

Shortly after the decision in the above case, Mr. Paterson tendered his resignation as inspector for the Local Authority.

An appeal against the decision has since been intimated to the Quarter Sessions, to be held on 6th April, on behalf of Mr. Jones, J.P., Fiscal, when the whole of the above evidence will probably be re-led. The ground of appeal is "that the judgment of the Justices is contrary to the evidence adduced."

OXFORD CIRCUIT.—STAFFORD, March 11.

(Before Mr. Justice Quain *and a Special Jury).*

Earp *v.* Faulkner and Davis.

This was an action for the negligent keeping of fences and cattle, whereby the cattle of the defendants infected the plaintiff's cattle with the foot-and-mouth disease.

Mr. Stavely Hill, Q.C., and Mr. J. O. Griffiths appeared for the plaintiff; Mr. Matthews, Q.C., and Mr. Radcliffe Cooke for the defendants.

This case, which was of especial interest to agriculturists, lasted throughout the whole of Thursday and was only completed by midday on Friday. The following are shortly the facts:—The plaintiff is a farmer and cattle dealer, living at Dunstall, about a mile from Wolverhampton, and the defendants are partners and large cattle dealers, who are in the habit of renting the aftermath from farmers during the autumn and winter months, and at the time when the cause of action arose—namely, in December, 1874—they were occupiers of some fields at Dunstall, adjacent to the land of the plaintiff, of which they had taken the aftermath from one Mason, the tenant of the fields.

According to the plaintiff's case the defendants' herd of store cattle—twenty-three in number—frequently strayed from the fields in question on to the plaintiff's land, and both the plaintiff and his cowman stated that the defendants' cattle were so straying and mixing with the plaintiff's cattle on the 13th, 15th, and 18th of December. It also appeared that on the 9th of December a large herd of some seventy head of Irish cattle, which the defendants had purchased at Liverpool on the 7th, and sent on the evening of that day to the fields at Dunstall, were driven off early in the morning for sale at Wolverhampton and Birmingham, but owing to the darkness one cow was left behind in the road between plaintiff's and defendants' land. This cow was seen by the plaintiff on that day in the road, and it appeared to him to be suffering from foot-and-mouth disease. In the course of the day a drover of the plaintiff took a cow he had bought in Wolverhampton to his farm at Dunstall, and by mistake drove with it the diseased cow in the lane into the plaintiff's farmyard. The plaintiff swore that the diseased cow was immediately turned off the land, and in consequence of information given by the plaintiff the inspector came and saw the

diseased cow on the 12th and condemned it to be slaughtered. The defendant Davis, who took the sole management of the cattle at Dunstall, found out that he had lost one of his beasts when he made up his accounts after their sale at Birmingham, and gave directions that it should be searched for, and it would seem that his men did not discover it until it was being seen by the inspector, when two of them were present. Davis himself being away from home, did not know of its condemnation till the Sunday following, the 13th. On the 15th the plaintiff wrote to the defendant Davis, naming the fact of the diseased cow having been found in the lane, and also complaining of the store cattle of the defendants being upon his farm and in his yard on that and the previous days, and stating that they were infected with foot-and-mouth disease. The plaintiff also informed the inspector of the existence of disease in the defendants' herd of store cattle. On that day the defendant Davis saw the inspector, and expressed his disbelief in the existence of the disease among his cattle, as they had had it in the previous summer, and it was a general opinion that cattle could not take the same disease again so soon. Nothing further appears to have been done by the defendants until the 18th, when the inspector saw the cattle, found them suffering from foot-and-mouth disease, and ordered the precautions required by the Contagious Diseases Animals Act to be carried out. The disease appeared among the plaintiff's cattle on the 20th.

For the defence it was contended that the disease originated either with the missing cow in the lane driven by mistake into plaintiff's yard, or from the cow bought by him at Wolverhampton, or from unforeseen causes, due to the prevalence of the disease in the county; and the defendants, their men, and other witnesses were called to prove that the store cattle in question never mixed with the Irish herd, were not in the habit of straying, and showed no symptoms of disease until the 18th, and that the foot-and-mouth complaint was so prevalent in December that it was highly imprudent to buy cattle in Wolverhampton market.

The learned Judge put a number of questions to the jury, chiefly relating to the knowledge by the defendants or their men of the existence of the disease at the time it was alleged to have been communicated to plaintiff's cattle, and the result of their answers was a verdict for the plaintiff on the second count of the declaration, they being discharged by consent from giving a verdict on the first. Damages, by consent, £80, and with leave to the defendants to move generally.—*Times*.

OFFENCE AGAINST DISEASED CATTLE REGULATIONS.

Thomas Hall, farmer, Oaks, Lindley, was charged before the Huddersfield Bench of magistrates, with having several head of

cattle suffering from the foot and mouth disease, and with not having with all practical speed given notice to the police; also with having the cattle in a field on the side of a highway and not separated from animals not so affected.

The case having been stated by Mr. Batley, the town clerk, evidence was given by Sergeant Standish, who visited the defendant's premises on the 10th February, and made a report at the police station on the following day.

Mr. Kirk, veterinary surgeon and inspector under the Cattle Contagious Diseases Act for the local authority, stated that he made an inspection of the cattle on the 13th February. He found 48 head of cattle on the premises. Nineteen were suffering from foot-and-mouth disease, and the others were in different stages of the disease, or of recovery. He was of opinion that the cattle must have been suffering from the disease for a fortnight.

Mr. Learoyd made a speech for the defendant, the purport of which was, that the defendant had made a communication to the police as soon as he discovered the disease, and did not separate the cattle because they were all more or less affected by it.

Mellor Whitwham, a farmer's man, in defendant's employ, stated that he observed five of the cattle to be affected by the disease on the 10th February.

The Bench inflicted a fine of £10 in each case, and costs, amounting to £21 14s. 6d.—*Huddersfield Chronicle, Feb.* 20.

OBITUARY.

The following deaths have recently occurred :—

Alexander Barrowman, M.R.C.V.S., late Kirkaldy, Fife. Diploma bears date April 28, 1847.

Wm. Lockhart, M.R.C.V.S., New York. Diploma bears date April 25, 1849.

John M'Kirdy, M.R.C.V.S., Kingarth, Buteshire. Diploma bears date April 18, 1834.

James Gardner, M.R.C.V.S., Alexandria by Dumbarton. Diploma bears date August, 1832.

John Newlands, M.R.C.V.S., Glasgow. Diploma bears date May 7, 1851.

John Midgley, M.R.C.V.S., of Birkenhead, Cheshire. Diploma bears date February 27, 1867.

We have also to record the sudden death at Craigend Villa, Burntisland, on March 7th, of William Worthington, V.S., formerly of the Veterinary College, Clyde Street, Edinburgh, aged 72. Date of Diploma, April, 1840.

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Communications and Cases.

THE FITZWYGRAM PRIZES.

By George Fleming, M.R.C.V.S., Royal Engineers.

Little notice appears to have as yet been taken by the Veterinary Profession outside the Council of the Royal College of Veterinary Surgeons, of the magnanimous and magnificent offer made by Colonel Sir Frederick Fitzwygram, Bart., of one hundred guineas to be given annually, and to be bestowed in not more than three prizes on students or recently elected members of the profession, irrespective of the schools at which they may have been educated, who have proved themselves to be the most proficient in a competitive examination conducted in the fairest and yet most searching manner. This handsome offer has been made to the veterinary profession, and has been accepted by its representative body, the Royal College of Veterinary Surgeons, with every mark of gratitude and hearty appreciation; and it is not too much to say that such a testimony of Sir Frederick Fitzwygam's interest in and desire for the promotion of our science deserves more than mere thanks or passing recognition. I believe this is the first occasion in the history of our University that a gift of this kind has been bestowed, and there can be no doubt of the benefit that will be derived from it professionally and individually, at least to those who compete; for though all cannot be successful, the study and application which the competition will give rise to must profit the un-

successful very much. What enhances the gift is that it is not to be a mere academic prize, but one open to the *alumni* of every school in Britain, and the manner in which the examination will be conducted will be certain to bring out the best men first. In this way it may or should act indirectly on the schools themselves, and perhaps lead to improvement in the method of teaching, if this be necessary. At any rate, there can be but one opinion as to the value of the prizes, which the Royal College of Veterinary Surgeons has this year decided are to be three in number—fifty, thirty, and twenty guineas. I question whether medical students have such handsome prizes offered them for competition; it is certain that veterinary students never before had such an incentive to study, and the mere fact that it is a general competition, and not limited to one teaching establishment, should tempt competitors to strive with redoubled energy for the credit of their school.

It has been stipulated that the competition is to take place annually, and alternately in England and Scotland, and in addition to the amount of the prizes Sir Frederick has thoughtfully offered the sum of six pounds to those who compete in the final examination, and who have to travel to either country to do so; this sum is to defray the cost of railway travelling and lodging. Besides this expense, the examiners are also paid by the same generous donor.

Now as to the examinations, which are to be held in London for the first or present year. The Royal College has gratefully acknowledged the obligation it owes to Colonel Fitzwygram by asking him to select his own examiners on this occasion. This has been done, and the selection is as follows:

Anatomy: Mr. Fleming, M.R.C.V.S., Royal Engineers.

Physiology: Dr. Burdon Sanderson, F.R.S.

Pathology and Morbid Anatomy: Mr. Hunting, M.R.C.V.S., London.

Chemistry and Toxicology: Professor Voelcker, F.R.S.

Botany, Materia Medica, and Therapeutics: Professor Bentley, F.R.S., and Mr. Fleming.

The examination is to consist of two portions—a written examination and an oral and practical examination. The written examination Sir Frederick lays most stress upon, by allowing it double the number of marks he has allotted to the second; it takes place on the same days (two days—April 19th and 20th) in England and Scotland, and at the same hours in both countries. Every precaution has been taken that this important part of the competition will be fully and

fairly carried out, and it will be subsequently shown that none but the best men could be first. The subjects are anatomy, physiology, pathology and morbid anatomy, chemistry and toxicology, botany, and materia medica and therapeutics. Three hours are allowed for each paper, and two papers are answered on the first day; on the second day, in the afternoon, four hours are given to chemistry, botany, &c. The answer papers are forwarded to the examiners (to whom the competitors are only known by a number), who select the six who have obtained the greatest number of marks; and these in due course undergo a final competition before the examiners, for the three prizes.

There have been some misunderstandings and trifling difficulties this year, chiefly in consequence of the late period at which the somewhat complicated and novel arrangements could be completed, as well as from other causes. But a number of gentlemen who have just graduated have entered their names, and notwithstanding all obstacles, there cannot be room for doubt that a spirited competition will be the result; the thought of it makes one almost wish that their school career could be begun again. Next year, after benefiting by the experience of this competition, the arrangements will be more perfect, and notice will doubtless be given at an earlier period in the session, probably by advertisement; for it would appear that the London graduates knew nothing of the project until after they left college, though Sir Frederick's offer was made to the Royal College so long ago as January 6th and appeared in the *Veterinarian* for February. This, however, cannot place them at a very great disadvantage if the knowledge they have been striving to acquire has made anything like a deep impression. However this may be, they and the graduates of the other schools may rely upon it that they will have a fair field and no favour, and every zealous member of the profession must hope that Sir Frederick's splendid gift and laudable intentions may be done honour to by a first-rate competition and the most surprising results in the way of good answers and practical knowledge. The victors may well be proud of their success, and their schools proud of them. Heretofore there has been nothing to stimulate intellectual rivalry among students of veterinary medicine after they attained their diploma (and for that matter very little before that event); now there is a most enticing inducement, and it is to be hoped that a large number will enter the arena year after year. It will be the duty of the Royal College of Veterinary Surgeons to afford every facility to competitors, and to see that the object of the donor is thoroughly carried out.

It is a responsibility which the Corporation will heartily incur for the advantages it will confer on veterinary medicine in this country; and it may prove a stimulus to induce that Body to hold out the prospect of similar, but University, rewards to those who strive to deserve them.

LEAVES FROM THE VETERINARY CASE-BOOK.

By Thos. D. Broad, M.R.C.V.S., Bath.

Laceration of Muscle.

In the course of my practice I have had several cases of laceration of the fibres of the triceps extensor brachii muscle, but have notes only of four. The first was that of a tip horse working on the line, and who, when doing his ordinary work, become so lame in the off fore-leg that the owner thought the shoulder was either dislocated or fractured. It was with the greatest difficulty that the horse could be led to the stable, a short distance away, on three legs, not being able to bear any weight on the injured one beyond keeping the leg flexed and the toe of the foot slightly touching the ground. There were so signs of injury, but on pressure being applied to the muscular structure in connection with the ulna, pain was evinced.

Treatment.—The horse was placed in slings and kept for two months under ordinary treatment. He was then taken out of the slings and turned into a meadow near, being still very lame; in about two months he became quite sound; he was shortly after put to work, and appeared as well as before the accident occurred.

My next case was that of a heavy aged cart-horse working in a scavenger's cart. When walking on level ground he made a blunder, and in endeavouring to recover himself he lacerated one head of the triceps extensor brachii and scapular ulnaris muscles. I saw him a few minutes after the accident, and found that it would be very difficult to get him to walk to a stable, or into a low cart, and as he was old and not of much value I advised his being destroyed on the spot, which was done. I had not an opportunity of making a *post-mortem* examination, but instructed the knacker to examine the parts, and from his report I was satisfied that my diagnosis was correct.

The third case was that of a valuable six-year-old cart-horse, about seventeen hands high. The horse, when

working in a stone waggon on level ground, made a false step, and suddenly became so lame in the near fore-leg that he was compelled to move on three legs for a few hundred yards to a stable, where I saw him shortly afterwards, and found that he could not put the foot on the ground, but kept it in a flexed state, resting on the toe. There was no swelling, but considerable pain was evinced on pressing the ulna and muscles in connection with it.

Treatment.—The horse, being in a shed, where it was impossible to sling him, was allowed to remain about a month under ordinary treatment, after which he was turned into a meadow about fifty yards from the shed, being then nearly as lame as when the accident occurred, the owner wishing to have the horse destroyed. The animal continued very lame for three months, but in the course of the fourth month he became quite sound, and was soon put to his ordinary work, which he continued to do from that time, 1873, to January 1875, when he was brought to my infirmary suffering from ruptured stomach, from which he died about four hours after the first symptom of uneasiness was observed.

The fourth case occurred in June, 1874. A light-cart mare, which had been in a yard with other horses, was found to have received an injury without any person knowing under what circumstances it had been inflicted. I was called a month after the accident occurred. In consultation with Mr. Handy, veterinary surgeon, of Chipping Sodbury, I found the symptoms of this case precisely as those already described. Mr. Handy had given an opinion that it was a case of laceration of the fibres of the triceps muscle, in which opinion I agreed with him. The mare was very much bruised from lying so long on the ground, although at the time I saw her she was in a rudely constructed substitute for slings, from which she was taken every night, and replaced with a great deal of trouble in the morning. Having proper slings in my phaeton she was put into them, and left under the care of Mr. Handy. I subsequently learned that after about a fortnight the owner became tired of keeping her, and had her destroyed. Mr. Handy made a *post-mortem* examination, and from him I learned that the one head of the triceps extensor brachi and the scapula ulnaris muscles had been extensively lacerated, and were undergoing the process of repair.

In June, 1874, I was called to examine a carriage horse which had been frightened at a train in the town, causing him to kick and get his leg over the pole, in doing which he

lacerated some of the fibres of the flexor metatarsi muscle of the off hind-leg. It occurred near an hotel, into the stable of which he was taken. After about a fortnight's treatment he was led home, but was unfit for work for two months. I find that the majority of these cases recover in about two months, unless the muscle or tendon be nearly ruptured. In that case it will take about four months. Rest is the only treatment that is really required.

Red Water in Calves.

In January, 1874, I was requested to go into the country and examine a lot of calves about four months old, and in forward condition, supposed to be suffering from inflammation of the lungs. When I arrived I found that four of the calves were dead and six others ill, the respiration being much quickened, pulse about 80, and temperature 104—5°. The bowels were constipated and the appetite lost. I made a *post-mortem* examination of the four dead calves, and found that the lungs and livers were congested, but that the cause of death and the illness of the others was red water. On making inquiries as to how they had been fed, I found that they had had course ryegrass and clover hay, with plenty of swedes. This diet was no doubt the cause of the disease, as after changing the food no other case occurred. All the calves which were ill had sufficient sol chloride of Sodium given them to act as a purgative, and subsequently Ferri Sulph., Zingiber and Gentian were administered. They all recovered. I have also found that when ewes get too many swedes in the spring of the year they are very liable to red water. After attending to the calves I examined a two-year-old heifer who had lacerated some of the fibres of the gastrocnemii muscles of the near hind-leg, nearly amounting to a rupture, so that the position of the leg when the foot was on the ground formed an angle of about 45° from the calcis to the foot. The case was left to nature, and it was about four months before the leg had completely recovered from the injury.

Parturient Apoplexy.

October 5th, 1874.—Case 1.—I was called to attend an aged cow of ordinary size, but in bare condition. She had calved on the 2nd, and was observed to be unwell on the morning of the 4th. She was with difficulty brought in from the field, cold, stiff, and shivering. Her owner gave her half a pint of whiskey in gruel, and repeated it in the evening. On the following morning she appeared

worse, and could not rise. Mag. Sulph. and Sulph. were given in gruel. At 6 p.m. I saw her for the first time, and found the following symptoms:—Cow lying down, with her head and neck twisted on one side; she was nearly or quite unconscious, took no notice of her calf, and could not be made to attempt to rise; pulse 65, not full. Temperature 101·5°; bowels had not acted since she had been brought in from the field.

Treatment.—Give Ol. Ricini ℥viij, Ol. Croton Tiglii *m* × Mag. Sulph. and Sulph. ana ℥viij, Ant. Pot. Tar. ℥ij, Zingb. ℥iv.

6th.—Give at 6 a.m. Ant. Pot. Tar. ℥ij, Zingb. ℥iv.

At 8 a.m. she was still down, but appeared more conscious, and moved her position. Bowels had not acted; pulse intermittent; temperature, 102—5°; skin warm.

1 p.m.—She has got on her feet, and taken a little hay; bowels not acted.

Give Ol. Ricini ℥viij, Ol. Croton Tiglii *m* ××, Sulph. Mag. and Sulph. ana ℥ij, Ant. Pot. Tar. ℥j, Zingb. ℥iv.

From this time she gradually improved, and was turned into the field for a few hours daily on the 12th, after which she did well.

Case 2.—June, 1864.—I attended a cow two days after calving, and found her down and in a semi-unconscious state, with a bounding pulse, which induced me to bleed her, and in other respects treat her as stated in the last case, she recovered. In July, 1865, I was called to her again, and found her down and in the same condition as the year before, with the exception of the pulse, which did not warrant bleeding; in other respects she was treated as before, and recovered. I strongly advised the owner not to breed from her again, but he did not take my advice, for in March of the following year I was called to her again and found her down and quite unconscious, from which state she did not recover.

In cases of parturient apoplexy before the animals become unconscious, the treatment must be mainly directed to getting the bowels acted upon quickly, for which purpose I have always found that the giving of large and repeated doses of castor and croton oils, with salts, Ant. Pot. Tar., and ginger answered better than any other course of treatment.

Pericarditis.

October 28.—I was called to see a two-year-old heifer of the shorthorn breed, which had not been doing well for several weeks. She was thin, and fed but little, her respiration was quickened, pulse 80, and very weak, temperature 106°.

Auscultation indicated that the lungs were not the seat of the disease. I told the owner that in my opinion she would not recover. He wished me to treat her, and I applied mustard to the chest and gave her ℥vj of cod oil three times daily.

29th.—Fed a little better, and appeared slightly relieved. Continue the cod oil.

30th.—Much the same as yesterday. The owner thought her better, and would not act upon my advice to have her destroyed.

31st.—From the continued weak and quick state of the pulse, the high temperature, 105—6°, and other unfavourable symptoms, I felt certain that there was a considerable amount of disease about the heart, and induced the owner to have her destroyed, which he consented to. On opening the chest I found the pericardium lined with a layer of lymph, an inch in thickness, of a honey-comb shape, tightly compressing the heart, and stinking horribly. The parts of the pleura in contact with the pericardium were congested.

A few months since I had a case of pericarditis in a Skye terrier dog. He remained at my infirmary ten days before the owner would consent to have it destroyed, notwithstanding that he was much distressed in his breathing. On making a *post-mortem* examination I found the pericardium immensely thickened, tightly compressing the heart.

On the Use of Slings.

In the *Veterinarian* of 1870 there is a woodcut of a horse in slings, with its various measurements, and a reference to some of its uses by my nephew, A. Broad, and as he has not exhausted the subject I will make some remarks on the use of slings, knowing how comparatively few members of the profession keep such an instrument, and the great loss that must consequently be sustained by their employers. Some of the slings which are at the present time on sale by the London houses are useless, as it would be next to impossible to sling a horse when down with such tackle. Instead of there being a wide strong breeching and breast collar with straps and buckles, there are simply two four inch bands of flat rope for tying on the belly band, each end of which is attached to a piece of wood big and strong enough for a common cart shaft, and such as it would be extremely difficult to drag under a horse's belly when the animal is down, as that is the position in which we often find our patients when first called to attend them. The slinging of a

horse when standing can be done with a pair of waggon-shafts with a common sack nailed to it, or with other bungling contrivances which several hours are generally employed in completing, but when a horse is down and unable to rise, the appliances are useless. The animal in that case is often allowed to remain down until his skin is in such a deplorably bruised state that it is painful to look at him. He then either dies, or is killed, the owner, and probably the veterinary surgeon thinking that all had been done that could be. In attempting to get a horse upon his feet when down and unable to rise, strong breeching is essentially necessary, otherwise he will be likely when half up to slip back out of the slings. On the afternoon of Sunday, April 19th last, I was called six miles into the country to attend a large and valuable cart horse which had been in the morning down with the halter rein round the near hind heel so tightly that it was necessary to cut it to let the leg free, after which it was found that the near side of the head and eye were very much injured, also the leg and muscles of the quarter were so much bruised and strained that a dozen men, after trying for hours with planks, pullies, ropes, and sacking, were unable to get the horse upon his feet. After getting my slings on, and drawing the horse up, and keeping him suspended for a short time, I found that he was so exhausted that he could not stand. I therefore had a good bed of straw put down and lowered him on it on the off side, the one not bruised, keeping the slings on, and ordering that two men should remain with him through the night. On the following morning I had him drawn up again, when with the free use of the whip he was made to stand. Subsequently visited him and left orders that he was not to be taken out of the slings, notwithstanding which his owner had him taken out on the 24th, when shortly after the horse lay down, and when he tried to get up he could not, neither could they get him up although the slings were fixed. On the following morning I put him into the slings again, and kept him in until the first of May, when I took him out and had him walked round the stable, the owner wishing to get him across the yard to a large loose box. While being led across the yard the horse struck the toe of the near fore foot, jarring the injured leg, and then fell forward several yards on a long iron pig's trough which was placed under a wall, and by the horse's fall knocked to pieces. The horse was then lying on the injured side, and could not get up until I had him turned over. I then replaced him in the slings, and kept him there until the

15th, by which time he was able to walk to the loose box, where he was fed for a short time on green food, after which he was turned to grass for a few weeks, and has since worked as well as before.

On June 3rd last, at 11 a.m., I received a telegram requesting me to go fourteen miles to see a valuable horse stated to be very ill. On my arrival I found the horse down in one corner of a large loose box, where he had been found at 1 a.m. by the groom, who having heard the horse making a great noise got up to ascertain the cause, and then went for the veterinary surgeon, who came and applied mustard to the loins, and gave laxative medicine, but did not have recourse to any appliances for the purpose of trying to get the horse up. On carefully examining the animal I could not detect any symptom of illness. I therefore had him pulled into the centre of the box and tried to rouse him up, but he would not make any effort; and finding that the veterinary surgeon had not slings of any sort I telegraphed for mine to be brought immediately. After getting the horse in them and drawing him up, he would not make the least effort to get on his feet, but lay in the slings more like a dead horse than a live one. I then gave him three sharp cuts with a hunting whip across the quarters without his taking the slightest notice of it. I then gave the whip to the groom, who gave him sharp cuts across his bent neck, which had the effect of making him jump on to his feet and appear as though nothing had occurred. He drank a bucket of gruel as soon as it could be made, and fed well, but did not appear to require the use of the slings, but I thought it advisable to keep him in them for a few days, after which he took his ordinary exercise and appeared in every respect all right.

October 10th last I received a telegram requesting me to go twelve miles to see a horse. On arriving at the owner's place of business I found that the horse was three miles away. During our drive I learned that the horse had been purchased about three weeks previously for the purpose of drawing a wine merchant's cart, and that he had done his work very well up to the 6th, on which day, when drawing a light load, he slipped down, but got up and walked half a mile to an inn, and as he did not appear to be quite right, and being three miles from home, he was left there, when he soon laid down, and was seen on the following morning by a veterinary surgeon, who gave an opinion that the horse's spine was fractured, the lungs rotten, and that he would never get up again. In consequence of that opinion the person who sold the horse was communicated with, but he

declined to have anything to do in the matter. Consequently the horse was allowed to remain lying down, with very little bedding, from the 6th to the 10th. The object of my being called in was to corroborate the opinion which had been given. In fact, I was told by the owner that if I would do so he would have the horse immediately destroyed and sue the seller for the amount. I stated that I should not give any opinion until I had seen whether the horse could stand. I sent my assistant the same evening, and he had no difficulty in getting him up, and when up in the slings he ate everything that was given to him, and did not appear to require the use of the slings. I carefully examined him on the 12th, and could not find any symptoms of internal disease. I allowed him to remain in the slings until the 22nd, when I took him out and saw him exercised in a walk and slow trot, without showing any defect. He was kept there taking daily exercise until the 2nd of November, when he was walked home. He had in the meantime been examined by another veterinary surgeon for the purpose of trying to make out a case against the sellers, but the opinion given corroborated my opinion. On the 16th I received a telegram stating that the horse was down. I went to see him and found him in a place where it was impossible to sling him, or get him out, and as he had been down twenty-four hours and bruised himself very much it was decided that he should be killed, which was done on the 19th, when a *post-mortem* examination was made by myself and two other veterinary surgeons. We found all the internal organs healthy, but the ligamentous connection between the ossa innominata and that part of sacrum which corresponds to the transverse processes of the lumbar vertebræ was torn away for nearly three inches. There was also small ulceration in the interarticular cartilages between the sacrum and lumbar vertebra which would in the course of time have led to anchylosis of that joint, which is very common in old horses. There were also some little ossific deposits on the outside of two or three of the lumbar vertebræ. Had the horse been put into a proper place where he could have been got up easily, I see no reason why he should not have recovered, but that was not the desire of the owner, as he would have been very much blemished from lying on the ground so long. I afterwards understood that our opinions were so represented to the seller that he was induced to return £20 of the purchase money.

My object in reporting these cases is to show how necessary it is that every member in practice should have at least one set of slings (I have at the present time three sets in use),

with one or two extra bellybands varying in width from two feet to two feet nine inches, the last-named size being only suitable for very long horses. Mares will take a wider band than a gelding's. Moore's patent pully block is the simplest and most powerful yet invented, and being only one block instead of two, it does not require so high a stable. It is also much lighter, and more portable than Weston's patent, or any other that I have seen. One with ten cwt. lifting power, and a six feet lift, which requires fifteen feet of chain, is quite equal to lifting any horse. No person would be satisfied with ropes and ordinary blocks of iron, or wood, if he had ever used one of Moore's. They are manufactured by Head, Wrightson, and Co., of Stockton-on-Tees, the price of block and chains £2 10s, and for slings by Bath harness makers £5 5s.

Severe Wound in the off Fore-Leg of a Horse.

In July, 1874, I was called a short distance into the country to see a horse that had been frightened by lightning and causing him to run away with an aërated water cart, which came in contact with a wall, breaking off the point of the shaft, and causing the splintered end to pass through the off fore-leg of the horse, above and at the back of the knee, dividing the tendon of the extensor suffraginis, and cutting upwards into the bodies of the flexor metacarpi externus, internus, and the medius, nearly dividing the whole mass of muscles, and skinning them completely. After sewing up the skin I placed the horse in slings in a stable near where the accident occurred, and kept him in them about two months. He was then turned to grass in a field near. The leg at the seat of injury remained very large for a long time. The swelling is now gradually subsiding. The horse was taken up and put to work on February 11th. There is but slight lameness now, which in all probability will pass off in the course of a few weeks.

Severe Injury to Muscles and Tendons.

Some time since a horse was brought to my infirmary having started off with the carriage from being left in the street without an attendant. He ran into a shop-front, smashing a large plate glass window, lacerating and bruising his fore-arm and knee extensively, also divided the tendon of the extensor metacarpi magnus about five inches above the knee. After the extensive lacerations of the skin were sewed up, the horse was left at my place about seven

weeks. All the injured parts having healed up, he was led home and placed in a loose box for about six weeks, when he was brought for my opinion, as it was found that he could not bend his knee. On examination I found that the tendon at the seat of injury had become closely attached to the surrounding tissue and to the bone. As he was not likely to be of any use to his owner he had him killed. On dissecting the parts I found that the tendon was not only bound down closely to the radius, but also to the knee, preventing its natural action entirely.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 254.)

We would now review some of the principles connected with the differences attained by cultivation in the innumerable varieties of the Pomaceæ having reference chiefly to the apple, pear, wild service, and sorb. It has already been noted that the leaves of the apple and pear are more or less obovate and pointed at the apex, and with a more or less serrated margin, while the fruits vary from a rounded pomiform fruit, as seen in the crab, to the pyriform fruit of the pear, the former, however, even in different sorts of apple, graduating to pyriform as in the lemon pippin, while different pears are as rounded as apples. Another curious circumstance is that of size, as for example:

		Inches.	
The crab is. . .	about	1	diameter.
Winter pearman . . .	„	$3\frac{1}{2}$	diameters.
Wild pear	„	$1\frac{1}{2}$	„
Some cooking pears . .	„	5	„

Another interesting quality is that while the crab-apple is one of the sourest of fruits, the Ribstone Pippin is one of the most agreeable, and as regards the pear, the wild one is very austere, but who shall sufficiently extol the flavour of the Jargonelle, the Neris, Beurrés, Bergamotte, Swan's-egg, and hundreds of others, all so different in flavour, and yet all so varying from the rougher cider fruits, each one of which latter will be found to be as different as are the edible fruits.

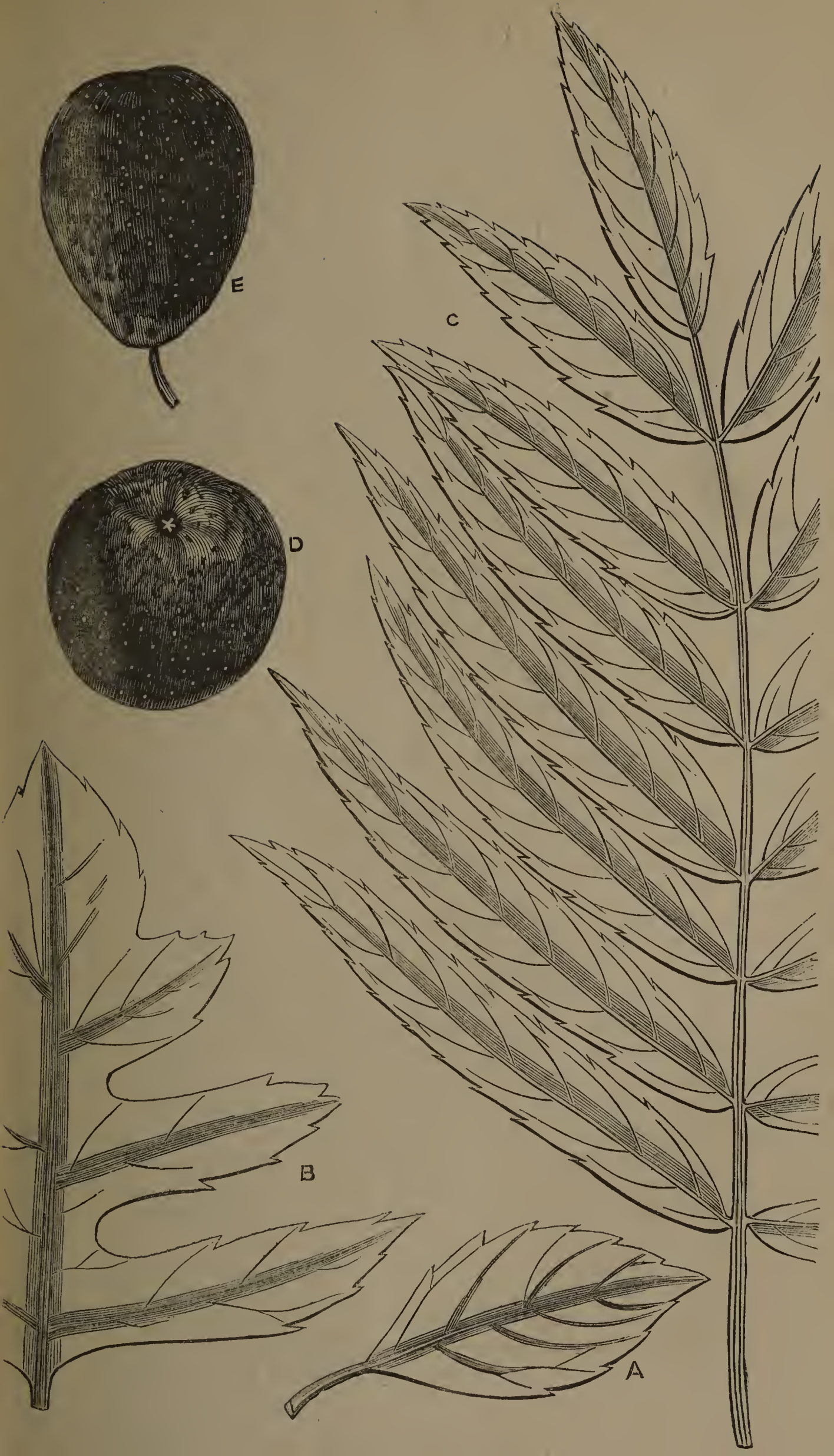
Here, then, both in size and flavour what diversity occurs, and if we inquire the cause of this we shall find that even in the wild fruits the product of no two trees will be found to exactly correspond. Hence, then, when a favourite form or

flavour is arrived at, it will be found necessary to propagate it by grafting, and even this operation usually makes some difference, as the graft may exert some difference on the stock or the contrary, and it is this very facility of change which renders it so easy to bring about sorts or varieties. These latter again may be grown from seed, but the chances are that seedlings will differ from anything which has gone before, and so every operation has a tendency to produce change, and there is then no wonder at the variations we meet with.

It follows then that as, after all, edible fruits of this type are but derivative through a long series of changes there is a tendency in some individuals from the same seed to revert to a wilder state than the parent, while others in a like manner advance, and it is just this principle which renders the Pomaceæ so exceedingly valuable. But again from what has already been advanced it will be found that while one section of a single genus—Pyrus—has simple ovoid leaves, another section has highly compound pinnate leaves, but it is curious too, that this difference is not suddenly arrived at. Our drawing A. shows the leaf of an apple-tree with its strongly serrated margin. B. Is the outline of the leaf of a variety of *Pyrus aria*, the original of which has a margin more deeply serrated than that of *Pyrus malus*, but in the variety *fennica*, here figured, it is in reality lobed to such an extent as to show the initiative of the pinnate leaf C of the *Pyrus domestica*, whilst if we look to the fruit of this tree as drawn from specimens sent by Mr. Foster, of Esher, we find that pomiform fruits, as at D, and pyriform, as at E, whilst both these from cultivated examples are fully twice as large as the wild fruit as we formerly obtained it from Wyre Forest.

Now, reverting to the single tree in this wild forest, Mr. Edwin Lees says "it has been celebrated in botanical works as the only apparently wild tree of the species in Britain. It was mentioned in the Philosophical Transactions for 1678, by Alderman Pitts, of Worcester, and considered as an old tree at that time," and in a note Mr. Lees says, "Dr. Plott mentions the Sorb tree rather loosely, as occurring in the moorlands of Staffordshire," but as no other tree has ever been observed there, it is highly probable that the old tree in Wyre Forest was what he had heard of, and a portion of Staffordshire, viz, Upper Airley, approaches very near. But I am inclined to the opinion that this tree was brought over

Reference to Woodcut.—A. Leaf of *Pyrus malus*, crab-apple, ovato-lanceolate, sharply serrated. B. Leaf *Pyrus fennica*, deeply divided, leading to C. Leaf of *Pyrus domestica*, like that of *P. aucuparia*, perfectly pinnate. D. Apple or pomiform fruit of *P. domestica*. E. Pear or pyriform fruit of ditto.


E
D
C
B
A

from Aquitaine, and planted beside a hermitage in the forest by some recluse who was visited by those who venerated the tree for its protective powers. I was assured by an inhabitant of the vicinity that the hard fruit of the Sorb was formerly hung up in cottages as a protection from "the witch," and even now the idea of its virtues has not quite died away. Its relationship to the Mountain Ash, still superstitiously regarded in Scotland, renders it likely that this tree should be considered equally if not more powerful as a charm against witchery. A mound of stones, now overgrown with brambles, may be noticed by close inspection near the tree, probably the remains of the hermitage—for many existed previous to the Reformation in the north of Worcestershire.

The hermit perhaps had a garden, for the privet and *Prunus domestica* grow close by, though I did not see them elsewhere in the forest." *

We have already adverted to the fruits as obtained from Esher; they are drawn in our figures of natural size, and their forms show the variations to which they may attain. We have partaken of these fruits bletted like medlars, and confess to a liking for them.

Apples, pears, sorbs, &c., seem then to have a wonderful aptitude for variations, and although the apple and pear appear to have been settled upon as alone worthy of cultivation, we cannot help thinking that the sorb and service trees might have been equally improved, but, with all, the very faculties for change set forth in our drawing fully explain, not only their present, but the facilities for future, development of varieties or sorts.

Of course, sorts are variously arrived at. Thus we constantly hear of a new kind of kernel fruit, which means a fresh variety derived from seed. Well, as any apple or pear is in itself but a derivative, we cannot be sure that its seed will produce the same stock as the parent; it hence follows that to perpetuate any particular sort we use its graft. So that with growing from seed, with grafting and budding, forms are multiplied to an extent which would otherwise be impossible, and even now the limits of variation in the apple and pear cannot be said to be arrived at if future experimenters should mix them with the sorbs and service trees, we quite believe that a new era in fruit growing will have been arrived at.

In no section of plants, then, is the principle of progressive development more clearly traced than in the *Pomaceæ*, and therefore an examination of these is of the highest importance in tracing out the principles of Botany.

* 'Botany of Worcester,' p. 5.

HIPPOPHAGY.

By "Quæsitor."

That the food of man should consist of vegetable and animal substance will be generally conceded, also that the present meat supply is not equal to the demand. Elaborate calculations have been made which show that the average requirements *per head* of the population is seven ounces *per diem*, whereas the quantity actually available is two ounces.

It follows, therefore, that any effort to supplement our meat supply is a step in the right direction, and it is not to be wondered at that the attention of philanthropists seeking wherewith to feed the suffering and starving poor should have been turned to the horse, the mule, and the donkey, whose flesh science and experience pronounce to be nourishing, of good flavour, and in every way suitable as human food.

It may be interesting to your readers to know what has been done by our French neighbours with a view to overcome the very great prejudice which, no doubt, exists with reference to *chevaline* as an article of diet.

The number of horses, donkeys, and mules slaughtered for human food in Paris in

1867	was	2152
1869	„	2658
1872	„	5732
1874	„	7184

The number of butchers' shops open on January 1st of the present year for the sale of *chevaline*, or horse flesh, was sixty. In the provinces the increased consumption has been in the same proportion. Were it not for the existing prejudice, the probabilities are that the quantity consumed annually would have been still larger.

With a view to disseminate these facts and encourage further efforts to overcome the before-mentioned prejudices, a banquet was given on the 3rd of April last at the Grand Hotel, Paris, presided over, curiously enough, by our countryman, Mr. A. S. Bicknell, so well known in connection with a similar dinner given some years since at the Langham Hotel, London

That the French authorities consider the question of Hippophagy an important one may be gleaned from the circumstance that Marshal McMahon, President of the Republic; the Minister of War, and the Governor of Paris, sent repre-

sentatives. M. Druyn de Lhuys, the late French Ambassador in London, M. Geoffroy Saint Hilaire, Director of the Acclimatization Society, Dr. Bonnafont, late Surgeon-in-Chief to the Army, and other distinguished men, also attended.

The stewards were Baron de Leysac, Gendra-Malherbe, Petibon for France, Mr. G. Washburne for America, and Mr. Phillips for England.

The band of the Paris Guards, considered the best in France, contrary to precedent, was allowed to attend.

The dinner, admirably cooked and well served, was an undoubted success. The soirée also as agreeable as no doubt it will prove useful in overcoming that feeling which exists in some countries against *chevaline*.

On separating each visitor, I think, felt that he had aided an eminently humane work.

It appears to me to reflect upon our profession that we have done so little to encourage the consumption of horse flesh in this country. One would have thought that the price* for which it could be retailed here at a profit would have ensured its use, the more so when we are told by perhaps the greatest living authority on entozoa—Dr. Cobbold—that the horse, unlike the ox, sheep, or pig, is free from those parasites which so injuriously affect man.

To the Press we must look for aid in drawing attention to this subject and in disseminating more enlightened notions.

In conclusion I would add that if you—Messrs. Editors—attach the same amount of importance to this question as I do, and your readers desire further information, I will endeavour to obtain it for them.

YEW POISONING.

By B. H. Russell, M.R.C.V.S., Grantham.

In the March No. of the *Veterinarian* a communication appeared from Mr. Earl, of Shifnal, on the above subject, in which he gave it as his opinion "that the activity of the poison is increased by the frost drying up the sap of the yew." If I may venture on your space I will recount two cases which came under my notice last year, in which the poison was equally if not more quickly fatal, when the sap was well up, and the shoots quite fresh and green; and I think Mr. Earl will agree with me that it matters not at what season

* In France the meat costs 10*d.* and more per pound.

of the year, or under what circumstances, yew in quantities is eaten; death generally results, at least in our patients.

Case 1.—On the 6th June, 1874, I was sent for to make a *post-mortem* examination of a yearling beast which had apparently dropped dead, as there was no evidence of the least struggle having occurred. I arrived at the place about an hour after the death of the beast (which I may observe was seen to fall dead, although just before feeding apparently in the best of health), and found the stomachs tremendously distended owing to an accumulation of gas. While the men were removing the skin I was turning the matter over in my mind as to what could have been the cause of so sudden a death, when on looking down I noticed a quantity of freshly cut yew twigs lying about. On making inquiries I found that the gardener had that morning trimmed a yew fence, and had carelessly wheeled the refuse and deposited it upon that spot. I then opened the jaws of the beast and there discovered several twigs in a partially masticated state, while the rumen was found to contain at least a bushel by measure of the yew trimmings; but there were no inflammatory patches, merely a slight blush. The lungs were gorged with black blood and the heart much in the same state as Mr. Earl had found that organ in his colts. The beast had been clearly poisoned on the spot by the yew trimmings.

Case 2.—Aug. 31st, early in the morning, I was sent for to make a *post-mortem* examination of a cart-horse found dead which, was supposed to be poisoned. On arrival I found the horse lying dead close to a yew tree, from which it was evident he had been feeding. He had apparently dropped dead as he was feeding, for his lips still grasped a twig of yew; and he must have died without a struggle, for although the ground was in a wet and muddy state owing to there having been some heavy rain, still there was not a mark to be seen. His legs were doubled under him and his head extended. There was a notable absence of rigor mortis. The abdomen was tremendously distended, and on opening the stomach it was found literally full of yew leaves and twigs in a masticated condition. The signs of disease were a slightly congested state of the lungs, and the fact of both sides of the heart being empty, with the exception of perhaps a tablespoonful of dark liquid blood in the right auricle.

THE OPERATION OF NEUROTOMY.

By G. Parker Short, M.R.C.V.S., Torquay.

Will you kindly favour me with a short space in your valuable journal to lay before your readers, and especially the younger members of the profession, the results of an operation which I have recently performed. I do not ask you to do this on account of any new theory I am about to set forth in connection with neurotomy, but simply with a hope that my remarks may impress upon those about to perform the operation for the first time, and upon their own responsibility, as was the case with me, that they should not be too sanguine for immediately beneficial results.

A brown gelding, about twelve years old, owned by a jobmaster of this town, in whose possession he had been for a little over five years, had during that time repeatedly gone lame. The opinions of several verterinary surgeons had been obtained, but no two seem to have agreed as to the cause of the horse's lameness; neither did either of them pronounce it to be a case of lameness arising from disease of the feet; but, on the contrary, owing to the good shape of the horse's feet, each positively declared that it was almost impossible for the animal to be suffering from foot lameness. The owner, however, was of a different opinion, and the animal being a very great favourite of his, he decided, after having consulted me upon the matter, to have him unnerved. The horse having been duly prepared, the operation was satisfactorily performed on the first day of this year in the presence of persons who, knowing the diversity of opinion which existed respecting the cause of lameness, were anxious to witness the result. Imagine, then, our surprise, on the horse being liberated and walked across the yard a few times, to find that, instead of going better, he was, if anything, actually worse. Such was the case, and so it continued to be day after day.

Nothing daunted, however, I asked the owner not to be without hope, as I had an idea that very probably the lameness after the operation was due in a measure to the gait which the animal, having been lame so many years, had acquired. Hope we did, and hope had its reward, for just three weeks from the day of the operation the horse began to show signs of improvement, and by the end of the month he was going quite sound, and with such knee-action as his owner said he never knew him to possess even when sound.

He was put to work on the 5th instant, and still continues his daily journeys, giving the greatest satisfaction to both his owner and driver.

ACTION OF THE SOLANACEÆ.

By Thomas J. Poulton, M.R.C.V.S.

It was with great pleasure that I read the article by Mr. Gerrard on the action of the Solanaceæ on the horse. It was a very able and interesting paper, and during its perusal, an illustrative case recurred to my memory—the subject a cow—which I had some time since attended.

After a few introductory remarks, Mr. Gerrard says that he is "not aware that poisonous properties have ever been ascribed to the potato," but a case had occurred in his practice "which," he adds, "I cannot but regard as a clear instance of poisoning from, I am convinced, partaking too freely of potatoes in a raw state."

The case which came under my notice occurred in January, 1869, my professional attention being then directed to a cow which had been suffering from colic since the morning. There was little or no tympanites of the rumen, the pulse was slow and thready, surface of the body covered with cold perspiration, extremities cold, breathing but slightly accelerated, slight ptyalism, lacteal secretion suspended, urinary secretion diminished, thick and opaque in colour; the alvine evacuations were also scanty, dry and hard. Slight flatus could be detected in the intestines, and the animal at times gave the usual indications of colic by constitutional disturbance, kicking of the belly with one hind foot, twisting of the tail, low moaning, and backing. The usual intervals of ease were likewise present. My diagnosis of the case was colic, and my prognosis not unfavorable. A diffusible stimulant combined with an aperient was all I considered necessary, together with handrubbing the legs and applying bandages to them, with a cloth over the body. The next day I found the cow better and she was soon discharged, cured. *She had been partaking freely of potatoes.*

The above case has not been cited because it is unusual, for when at College I remember Professor Simonds saying, "Potatoes in a raw state not unfrequently cause colic in the ox." I may here state I was called in very recently, 13th January, 1875, to attend a heifer suffering from colic,

produced from eating Swede turnips, which were partly rotten through frost. The case yielded readily to treatment similar to the above. Here I noticed that the animal did not back, but rushed forward with mouth open, and thrust her muzzle into the litter of the yard, and then threw herself on the ground. Indeed she rolled and kicked like a horse in colic. These symptoms are not generally given in the descriptions of this disease, and they appear to me to be very uncommon.

Pathological Contributions.

CATTLE PLAGUE.

An outbreak of cattle plague is reported to have occurred in Wurzen, in Silesia, but no particulars have yet been received. The report of an outbreak of the disease in the Netherlands has been officially contradicted.

In Poland the disease prevails in several localities.

Hungary continues free from cattle plague, and the disease is decreasing in Croatia, Sclavonia, and the military frontier. Cattle plague is also reported to exist at Salonica in several districts. According to the *Levant Herald*, cattle diseases of various kinds are raging all over Turkey.

"The visitation seems to be general throughout the empire. We hear of it in Bagdad and in Trebizond, the extreme points north and south of the eastern boundary of the empire. At Scala Nova, in the province of Smyrna, and at the Dardanelles, it has wrought terrible ravages. There is small pox among the sheep and pulmonary disease among the cattle. So far official documents instruct us. Private letters state that in the neighbourhood of the Dardanelles the most lucky have lost 50 per cent. of their sheep, and that of many large flocks only five in every hundred are left. A recent visitor to the plains of Troy remarked the skeletons of thousands of sheep lying bleaching upon the ground. From Smyrna we hear of vast flocks totally destroyed. What the disease has wrought in the famine districts of Asia Minor has already been told. From European Turkey the accounts are no less distressing. From Adrianople we learn that 30 per cent. of the horned cattle

and horses have been lost, and that sheep have died in a very much greater ratio. The Turkish official journal, called the *Edirne*, which is published at Adrianople, describes the peculiar symptoms of the disease which has carried off the horned cattle and horses, and attributes the mortality among the sheep to intestinal consumption caused by the severity of the winter and consequent scarcity of pasturage. In Macedonia there is not only scarcity of pasturage, but also of food for human consumption. From the most trustworthy accounts, however, it may be gathered that, as regards bread, the scarcity is only temporary, for it would appear that the agricultural operations in the province of Drama have been conducted this sowing season under exceptionally favorable conditions, and that the area of land sown has been above the average. From the province of Gallipoli the accounts are very bad indeed. The horned cattle are being swept away by a disease which in some localities affects the bowels, in others the respiratory organs, but which seems to partake generally of a typhoid character. In the case of horses the disease affects the spine, and is very rapid in its action. In the district of Enos, in this province, the sheep are affected by lung disease. The sanitary physician of Varna reports a like affection of the flocks in the Dobrudja."

FOOT-AND-MOUTH DISEASE.

FOOT-AND-MOUTH disease has now extended nearly all over the Continent, and cargoes of animals among which the disease exists, sometimes in an advanced form, have been landed during the past month from Germany, France, Belgium, the Netherlands, Denmark and Sweden. The disease has not been officially recognised at Copenhagen; on the contrary, the reports from Denmark state that the country is free from disease, excepting splenic apoplexy among stock; and the Minister of the Interior has issued an order subjecting animals which are imported from Schleswig and Holstein, and also from Great Britain, to ten days' quarantine during the prevalence of foot-and-mouth disease in those countries.

Foot-and-mouth disease has broken out in Sardinia and extended all over the island.

In this country the malady continues to prevail. Ireland, so far as is known, continues free from the affection.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of March, 1875, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

Foreign Ports from which brought.	Ports in Great Britain to which brought.	Disease.	NUMBER OF ANIMALS AFFECTED.					DISPOSAL
			Cattle.	Sheep.	Goats.	Swine	Total.	Slaughtered at place of landing.
Antwerp .	London .	Foot-and-Mouth .	209	288	...	...	497	497
,,	,,	Sheep Scab .	...	129	...	...	129	129
Boulogne.	,,	Foot-and-Mouth .	104	...	...	...	104	104
Bremen .	Hull . .	,,	...	5	...	...	5	5
,,	,,	Sheep Scab .	...	5	...	...	5	5
,,	London .	Foot-and-Mouth	145	...	...	...	145	145
Bremerhafen . .	Hull . .	,,	...	2	...	...	2	2
Cherbourg	Southampton . .	,,	...	...	...	24	24	24
Copenhagen	Newcastle-upon-Tyne	,,	20	5	...	...	25	25
Hamburg	Grimsby .	,,	...	2	...	...	2	2
,,	Hartlepool	,,	22	...	...	...	22	22
,,	Hull . .	,,	157	22	...	...	179	179
,,	Liverpool.	,,	...	350	...	...	350	350
,,	London .	,,	222	30	...	...	252	252
,,	Middlesborough	,,	...	...	...	180	180	180
,,	Sunderland . .	,,	..	3	...	...	3	3
Havre .	London .	,,	2	...	...	...	2	2
Ostend .	,,	,,	6	...	...	...	6	6
Total . . .		Foot-and-Mouth	887	707	...	204	1798	1798
,,		Sheep Scab .	...	134	...	...	134	134
Total			887	841	...	204	1932	1932

"ALEXANDER WILLIAMS, *Secretary.*

"Privy Council Office,
"Veterinary Department, 13th April, 1875."

ENTOZOA FROM AUSTRALIAN SHEEP.

In a letter recently received by Dr. Cobbold from Dr. John Rowe, of Mount Battery, Goulburn district, Melbourne, that gentleman writes as follows :—"In accordance with a wish expressed by you some five months ago, I have requested a friend and neighbour to send you a sample of the worms which have been decimating the flocks of Australia even more extensively than the fluke parasites." Dr. Rowe's letter is written from Cannes, in France, whither he has resorted during the winter ; but, according to a communication received from his friend who sent the specimens, there was considerable difficulty in procuring them at the time they were sought for. On this point, by way of explanation, the writer in question observes, that the present and latter season had been 'favorable,' by which it is evidently meant that comparatively few parasites had appeared. In this case, he adds, "the parasites were obtained from a twin-lamb, its mate being fat and fit for the butcher. This causes me to think that 'want' and proper nourishment drive the lambs to eat the small green pickings in the swamps whence they get the disease, and thus it follows that if we breed from none but sound and healthy parents there will be no fear of a recurrence of the scourge."

As Dr. Rowe himself very appositely remarks, the author has evidently accepted, if only in a partial manner, the theory of the production of these parasites advanced in the *Manual* employed at the College as a text-book. This is so far satisfactory ; for it is gratifying once in a while to see scientific work and practical experience going hand in hand. What is now the exception will one day, it is to be hoped, become the rule. In reference to the parasites themselves, nothing peculiar can be traced. All that have been received by Dr. Cobbold have been exhibited at his class demonstrations as good examples of the common lung strongyle (*Strongylus filaria*). In this connection it would be highly interesting to know if the rarer and larger species (*Str. rufescens*) is in any way concerned in the production of pulmonary lamb-disease in the Australian colonies.

PARASITES IN THE HORSE.

Since the communication which heads the April number of this journal was published, Dr. Cobbold has received another

set of specimens from Mr. Rees Lloyd, in which the presence of two "pin-worms" has been detected (*Oxyuris Curvula*). These parasites are from the original outbreak, but Mr. Lloyd writes to the effect that he was casually informed some time ago that "about a dozen ponies were ailing at a place called Trevil, where an immense number have died." Again, referring to the original epidemic, Mr. Lloyd adds: "It is singular that after this entozootic ceased among ponies grazing on the sandstone hills, I have not seen a single tænia—a proof that the cause in one district was the tænia, in the other the strongylus."

Facts and Observations.

Triple Birth in a Mare.—We have received the following particulars of an interesting case of triple birth in a mare belonging to Edward Bickbeck, Esq., Horstead Hall, Norwich. The animal was employed for agricultural purposes, and had been in Mr. Bickbeck's possession for upwards of two years; she was eight years old, and was not known to have been pregnant at any previous time.

The first foal was born dead, and was supposed from its condition to have been dead several days. The second was born alive immediately after the birth of the first one, but only lived about half an hour. The third was given birth to seven hours after the second. Like the first, it was dead when born, but its condition showed that at the time parturition commenced it was alive. The mare made a good recovery. The foals were all of the same colour, bay, and were perfectly formed.

Cattle Disease in Sutherlandshire.—Foot-and-mouth disease has, it is said, broken out with great violence over the whole of Sutherlandshire, and the farmers are in a state of great anxiety. At a meeting convened by the sheriff on Monday an alarming state of matters was revealed. On one farm 450 sheep and 50 cattle were reported suffering from disease; and on another farm 400 sheep were affected. The disease has appeared on a farm at Cape Wrath. Notices have been issued to isolate affected districts, and to stop the transit of sheep and cattle.—*London Paper.*

THE VETERINARIAN, MAY 1, 1875.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

VETERINARY JURISPRUDENCE.

HARD things are often said of the discrepancies among scientific witnesses. No matter how clear the evidence on the one side may be, there are never wanting equally strong statements on the other. There are many reasons which may be adduced to account for the different views which are entertained by various observers, probably of equal capacity. Numerous questions in science are yet open, and each man has a perfect right to the opinion to which his own investigations have led him. Sometimes the method of inquiry is necessarily incomplete, and the evidence obtained is partial; sometimes—it must, we suppose, be admitted—the influence of strong prejudice may render the inquirer mentally incapable of weighing the facts on both sides with absolute impartiality. Which, if any, of these disturbing conditions led to the contradictory evidence which was given by the scientific witnesses in the case Jones *v.* Kennedy, reported *in extenso* in our last number, we confess ourselves unable to divine. After a very careful consideration of the subject we have come to the conclusion that the evidence is without parallel in the history of veterinary jurisprudence. The question at issue was one of the most elementary in practical pathology. Certain sheep had diseased feet; this much is at least undoubted. The nature of the disease also did not admit of any dispute, according to the statements of each witness, but unfortunately the veterinary authorities on one side were as confident in their assertion that the disease was foot-rot as those on the other side were that it was foot-and-mouth disease.

Mr. R. B. Paterson, the Inspector of the local authority; a gentleman of great practical experience, and one of the Examiners on the Board appointed by the Royal College of Veterinary Surgeons, examined in the course of his official duties the 257 sheep belonging to Mr. Kennedy and found about 150 of them to be affected with foot-and-mouth disease.

"The disease was unmistakeable; could tell it at a mile distance if he was able to see the sheep."

Professor Williams, Principal of the new Veterinary College, Edinburgh, saw the sheep on February 11th, nearly a fortnight after Mr. Paterson had inspected them, but nevertheless his investigation left no doubt in his mind that the disease was foot-and-mouth disease. He "did not find vesicles on any of the sheep examined at Ellisland, but found marks where they had been."

Mr. A. T. McIntosh, veterinary surgeon, Dumfries, also examined the sheep, and found "sufficient to convince him that it was foot-and-mouth disease."

Nothing could be more emphatic than the scientific evidence for the plaintiff until that for the defendant was heard.

Professor James McCall, Principal of the Veterinary College, Glasgow, one of the Inspectors of the Veterinary Department of the Privy Council, examined the sheep on February 8th, rather more than a week after Mr. Paterson saw them, and a few days before Professor Williams inspected them. Mr. McCall, according to the report of his evidence, made a very minute examination; he also produced specimens of the feet of the sheep in question, and of other sheep which had been killed while suffering from foot-and-mouth disease. In reference to the sheep belonging to Kennedy, "he had not the shadow of a doubt in his mind that the disease from which they were suffering was foot-rot, and nothing else."

Professor Walley, Principal of the Veterinary College, Edinburgh, and Professor Fordie, of Glasgow, examined the sheep on February 11th.

Professor Walley "had not the slightest doubt that they were suffering from foot-rot, and not from foot-and-mouth disease."

Professor Fordie examined the sheep, and "in no instance did he find any vestige of foot-and-mouth disease, but he found foot-rot in various stages."

Mr. John Tait, veterinary surgeon, Annan, also "was quite certain that the disease was foot-rot, and not foot-and-mouth."

This was the veterinary evidence, and in endeavouring to reconcile the discrepant statements we had taken refuge in the possibility of both diseases being present in the same flock;

but this well-intentioned effort on our part was entirely frustrated by an episode in the hearing of the appeal before the Quarter Sessions held on April 6th. At one stage of these proceedings the diseased foot of a sheep was handed to Professor McCall, and was by him asserted to present evident marks of foot-rot, without any sign of a vesicle, while the same foot, handed to Mr. Paterson, was at once recognised as a specimen of foot-and-mouth disease, in which the evidence of vesicles having existed was perfectly clear.

In sheer despair we ask, what does it all mean? and on what system are intending graduates in veterinary pathology to be taught and examined? Professor McCall teaches his pupils to accept certain indications of disease as evidence of foot-rot, while Mr. Paterson, the examiner, insists that they are indisputable signs of foot-and-mouth disease. What is to become of the student who is undergoing examination? Will the teachers and examiners avoid such knotty points by common consent, and let the student arrive at his own conclusions respecting this widely spread and easily distinguished disease of the foot of the sheep? Is the whole account, however, a spiteful but very feeble hoax, originating in some one's mind who has found a quite inexplicable pleasure in endeavouring to hold veterinary witnesses up to ridicule?

"THE FITZWYGRAM PRIZE."

The information which has reached us relative to the "Fitzwygram Prize" would seem to indicate that the good intentions of the donor have to some extent been defeated. This failure is to be mainly attributed to the precipitate haste which has marked the proceedings of the Committee appointed to carry the scheme into practice, rather than to defects in the purpose itself. In saying this, however, we would not have it inferred that we agree with the change which has been made in the principle of the award. The error may possibly be repaired, but it has already led to difficulties which cannot be so easily overcome, and which may hereafter endanger the very existence of the scheme itself. Originally it was intended that *students* of the several Veterinary

Schools should, *as a stimulus to study*, alone be eligible as competitors; but suddenly it seems to have been discovered that the students of the Royal Veterinary College, in consequence of their examination for the diploma of the Royal College of Veterinary Surgeons falling earlier than that of the Scotch students, could not as such compete. This difficulty we had foreseen, and consequently no notice was given to the class of the intended prize competition. Instead, however, of the Committee taking time to mature a plan by which this difficulty could be met, and consequently postponing temporarily the proposed competitive examination, they hastily issued a printed circular setting forth that some *misunderstanding* had occurred with regard to the "Fitzwygram Prize," and that *students who had recently obtained the diploma of the Royal College of Veterinary Surgeons* would be eligible for examination. The circular bore date a week after the London examination had closed. This act immediately destroyed the principle on which the whole scheme had been based; it was not *students*, but veterinary surgeons, to whom prizes were *now* to be awarded. Under such circumstances it was impossible for the Royal Veterinary College to send one competitor into the field, and the Governors drew the attention of the Royal College of Veterinary Surgeons to the fact that, in the letter in which the particulars of the prize were originally given, it was stated that the *students* of the several schools were alone to compete, whereas it was now proposed to extend the eligibility of the competitors to *veterinary surgeons* who had recently obtained the diploma of the Royal College of Veterinary Surgeons; and they added that these gentlemen, being no longer students, were beyond their pale.

It was thus supposed that the whole course was left open to the Scotch schools, the students of which had been informed of the intended examination and encouraged to become competitors. Ultimately six competitors appeared in the field, three of whom had recently graduated from the Royal Veterinary College, the other three coming from the New Edinburgh College. We may observe, however, that the gentlemen who had studied at the Royal Veterinary College

themselves elected to become competitors; and, whatever the result of the examination may prove to be, it is right that it should be known that there was on the part of the College no selection of its best men. The small number of competitors would probably have been added to, but for the circumstance that the graduates from the Clyde Street Edinburgh College were only enabled to arrive in time to find themselves excluded from the examination room. How this delay happened we do not know; but it goes to prove the incompleteness of the arrangements. We might add to these remarks, and dwell on the course taken by the Royal College of Veterinary Surgeons with regard to their examinations in general, but we content ourselves by showing how good intentions are often frustrated, or even destroyed, for want of calm deliberation and well matured plans of action.

Extracts from British and Foreign Journals.

THE PATHOLOGY OF THE BLOOD.

M. Laptschinsky, of St. Petersburgh, contributes a paper to the *Centralblatt* on the microscopic changes undergone by the blood in various diseases. He finds that in various diseases in which marked febrile symptoms are present, the microscopic aspect of the blood is essentially different from that of health. The changes consist in the blood-corpuscles not running into regularly formed rouleaux, but accumulating in heaps or clumps of various size and shape. The individual blood-corpuscles frequently appear swollen and cloudy, and their contours less distinct than natural. Small corpuscles, one third of the normal size, are often met with, some of which exhibit a more intense colour than natural, whilst others are completely pale. In the interspaces of the clumps of red corpuscles great numbers of white corpuscles may be seen, often coalescing to form groups of from 3 to 8. In typhus he counted from 60 to 80, and more, in one field of vision; in cholera from 110 to 130. Careful enumeration of the relative numbers of white and red corpuscles four days after death in the above cases showed that there was 1 white to 60 red corpuscles in the case of

typhus, and 1 white to 23 coloured in the case of cholera. In a very anæmic woman, suffering from suppuration in the knee-joint, the proportion of the white rose to 1 to 13 red. The white corpuscles in these cases presented unusually active and extensive amœboid movements. The nuclei of the colourless corpuscles took a part in the amœboid movements, and could be seen altering their position and form in the interior of the white corpuscles. The thorn-apple or horse-chestnut-like form of the red corpuscles he did not find to be unusually frequent. He found, however, large quantities of granular or detritus-like material in the blood of febrile, but not much in the blood of cachectic and anæmic, patients. From his enumerations he feels satisfied that in febrile diseases, and in Bright's disease, the conversion or development of white corpuscles into red is either materially retarded or is entirely arrested.—*The Lancet.*

ON GELATINE DISCS CONTAINING ALKALOIDS FOR HYPODERMIC ADMINISTRATION.

By A. Ernest Sansom, M.D. Lond., Physician to the North Eastern Hospital for Children, and Assistant-Physician to the London Hospital.

There can be no doubt of the value of the hypodermic injection of solutions containing salts of the sedative alkaloids in many conditions of pain, and very probably such a method of administration of remedies only waits a further development. Certain of the difficulties connected with the operation are now reduced to a minimum: syringes are well constructed, and, by improvements in the needle-pointed tubes, punctures are rendered almost painless. It has always seemed to me, however, that some objections stand in the way of the more extended employment of hypodermic medication. The first is that the solutions do not keep well, and in keeping vary in their strength. A practitioner requiring his solution in an emergency finds it, after having left it for some time unused, mildewed and useless. A second objection is that the solutions are necessarily cumbrous to carry about. Chiefly, however, the objection is this: the cases calling for hypodermic treatment are sudden, the solution is not at hand, and by the time it is procured the great opportunity is lost.

The idea of a plan of overcoming these difficulties was suggested to me by the use of the gelatine discs containing atropine employed for obtaining dilatation of the pupil. At my request Messrs. Savory and Moore prepared some gelatine discs containing (*a*) morphia acetate one sixth of a grain, (*b*) atropia sulphate 1-120th of a grain in each. These are

immediately soluble—one in two, two in three, drops of warm water,—and I have found the injection of the solution thus made to be attended with the best results. The discs have also been employed in the wards of the London Hospital, and Mr. Shapley, one of the resident medical officers, informs me that they have succeeded perfectly well.

The method I adopt of dissolving is to place the disc or discs in a teaspoon with two or three drops of water, and then warm over a spirit-lamp or candle. Solution takes place in a few seconds, and the fluid is at once taken up in the syringe and injected. It is obvious that by adopting these means, providing that the discs be carefully prepared, there is absolute certainty as to dosage. There is no doubt that the discs in a dry state will keep good for an unlimited period. No difficulty can be experienced as to having the hypodermic medicaments at hand, for the whole series—containing salts of morphia, atropia, caffeine, apomorphia, strychnia, ergotine, &c.—can be carried in an envelope which occupies scarcely any appreciable space in the smallest sized pocket-book.

GARLAND ON THE ACTION OF INTESTINAL JUICE.

G. M. Garland ('Roylston Essay,' second prize, *Boston Medical and Surgical Journal*, May 7th) has obtained intestinal juice from a Thiry's fistula in a dog. The juice was not collected until the animal had perfectly recovered its health after the operation required to establish the fistula. It digested fibrin both raw and boiled, though it had little action on boiled eggs, and it changed starch into sugar. He seems to have made no experiments himself on the conversion of cane into grape-sugar, but he considers this to be pretty well established by other observers. Microscopic examination of the intestine at the fistulous opening showed no structural change in it except atrophy. The author made the interesting observation that, when the dog was frightened, the secretion of intestinal juice became much diminished.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD APRIL 7TH, 1875.

M. E. Naylor, Esq., Vice-President, in the Chair.

Present.—Professor Simonds, Col. Sir F. Fitzwygram, Bart.; Messrs. Moon, Balls, Harpley, Field, Fleming, J.

Roalfe-Cox, Cartledge, Greaves, Gowing, Cheeseman, Woodger, Moore, Cartwright, and the Secretary.

In the absence of the President, M. E. Naylor, Esq., Vice-President, took the chair.

The Secretary read the notice convening the meeting.

The minutes of the last meeting were read and confirmed.

A letter was read from the President of the Royal College of Veterinary Surgeons, expressing his regret at being unable to attend the Council meeting, he having been summoned as a special juryman at the Kingston Assizes for that day.

The Secretary announced that a letter had been received from Mr. H. E. Wilkinson, of Newcastle-on-Tyne, acknowledging the honour of his election as a member of the Scotch section of the Board of Examiners.

Mr. Fleming presented to the Library a copy of his new work entitled "A Manual of Veterinary and Sanitary Science and Police" in two volumes.

Professor Simonds proposed a vote of thanks to Mr. Fleming for his valuable presentation. Mr. Fleming had made many valuable presents, but this was undoubtedly the most important of all.

Mr. Greaves seconded the proposal, which was unanimously agreed to.

The Secretary announced that the following letters had been received:

(1). From Mr. Thomas Chambers, of Dundalk, asking for a certificate of attendance at the Royal Veterinary College.

He had been informed in reply, that the College never granted certificates of attendance at lectures until the student had obtained his diploma.

(2). From the several members of the Board of Examiners approving the arrangements that were made for carrying out the examinations.

The results of the late examinations held in London were announced. At the "Pass Examination" 28 passed and 6 were rejected. At the First Examination 10 passed and 5 were rejected.

The Secretary drew the attention of the Council to the disgraceful conduct of some of the students in damaging the College premises.

After some conversation, *Mr. Harpley* proposed, and *Mr. Gowing* seconded, a motion to leave the matter in the hands of Professor Simonds. This was agreed to.

Professor Simonds said although it was a very unpleasant duty he should be happy to do all he could to make the stu-

dents conduct themselves as they ought, when they presented themselves for examination. He would carry out the wishes of the Council to the best of his ability.

The Secretary drew attention to the case of two students, Mr. J. Hanne and Mr. J. S. Cooper, who paid their Examination fees in 1873. On examination they were rejected. They had presented themselves on two subsequent occasions. For the third examination a fee of three guineas was demanded, which they paid under protest.

Professor Simonds said that in 1873 the examinations were under the old bye-laws, and the two students had not been rejected twice under the present laws. The three guineas could not therefore be justly demanded from them.

After a short discussion in which Mr. Gowing, Sir F. Fitzwygram, and Mr. Harpley took part, it was agreed on the motion of Mr. Fleming, seconded by Mr. Cartledge, "That the three guineas received in error be returned."

Letters were read—

(1). From Dr. Dunsmure stating that the number of students who intended to present themselves for examination in Scotland in April was: Clyde Street School, 8; New College, 10; Glasgow, 15. Professor M'Call had also informed him that he had four students for the first examination. As there were no students of this grade from Edinburgh, Dr. Dunsmure had written to Professor M'Call, and suggested that the examination of these gentlemen should be postponed until July, in order to save the funds of the College.

(2). From Dr. Dunsmure, stating that he had received a communication from Professor M'Call, who stated that he could not consent to the postponement of the examination of the four students.

The Secretary said those students who were rejected in July, 1874, would pay no fees for their examination in April.

On the motion of *Mr. Fleming*, seconded by *Mr. Roalfe, Cox*, it was agreed "That the examinations take place in the ordinary way."

The Council fixed the next examinations to commence on July 1st.

A protest against the Charter sought for by the Royal Veterinary College, London, was read from the Principals and Professors of the Veterinary College, Edinburgh. The signitaries were of opinion that it would be more in accordance with the spirit of the times, and tend more to the preservation of unity in the profession, if the Royal College of Veterinary Surgeons endeavoured to obtain a Supplementary

Charter empowering them to grant an additional and higher degree in the form of a fellowship to graduates of the schools.

The correspondence between the Royal College of Veterinary Surgeons, the Governors of the Royal Veterinary College, London, and the parliamentary agents, Messrs. Loch and McLaurin, on the subject of the Charter applied for by the Royal Veterinary College, London, was read.

Mr. Harpley said the Charter had been obtained, and it was no use for the Council to take any further steps in the matter.

Professor Simonds said the law officers of the Crown had advised the Lord President that the words which were introduced in Clauses 13 and 17 of the Charter were unnecessary, and that immediately upon receiving information to that effect the Governors, who had consented to their original insertion in compliance with the wish of the Council, had taken steps to have them reinserted, and for all they knew to the contrary they had so been.

Mr. Cartledge proposed, and *Mr. Harpley* seconded, "That the whole of the correspondence connected with the Charter of the Royal Veterinary College be entered on the minutes."

This was agreed to.

Letters were read—

(1). From Professor Simonds, officially informing the President of the Royal College of Veterinary Surgeons, that Her Majesty had been graciously pleased to grant the Royal Charter of Incorporation to the Royal Veterinary College, London.

(2). From the President of the Royal College of Veterinary Surgeons to Professor Simonds, requesting that a printed copy of the Charter should be sent him.

(3). From Professor Simonds, stating that printed copies of the Charter were not yet ready, but one should be sent to the President of the Royal College of Veterinary Surgeons as soon as it was obtainable.

The Secretary was directed to send a reply to Professor Wally, stating that the Charter had already been obtained, and that every effort had been made by the Royal College of Veterinary Surgeons to prevent anything being introduced into it which might militate against the interests of the Royal College of Veterinary Surgeons.

The Secretary read the Report of the Committee appointed by the Council, January 21st, to inquire into an alleged irregularity in the examination of Mr. Michael John Treacy, a student of the Glasgow Veterinary College, who obtained his

diploma, December 23rd, 1874. The Committee reported that "from the evidence obtained, the facts of the case appear to be as follows: Mr. Treacy entered the Clyde Street School under Mr. Williams in October, 1872. He presented himself for his first examination before the Board of the Royal College of Veterinary Surgeons, in July, 1873, and was rejected. He then removed with Mr. Williams to the Edinburgh New Veterinary College, and passed his first examination in December, 1873. He remained at the Edinburgh New Veterinary College till April, 1874, thus completing the first half of a winter session after passing his first examination. On the 18th November, 1874, he joined the Glasgow College, and passed his final examination in December, 1874, having studied at that school little more than one month." The Committee are of opinion that Mr. Treacy had not *bonâ fide* completed one entire winter session at the time of his final examination. The Committee think that Professor McCall was not justified in giving Mr. Treacy his certificate for final examination.

The Committee submit to the consideration of the Council whether it would not be desirable that in lieu of the present certificate a form of certificate for transmission to the Secretary of the Royal College of Veterinary Surgeons should be drawn up, showing the period at which the student commenced and concluded his studies, to be signed as at present by the Principal. If this suggestion is approved, the Committee suggest the following form as suitable:

"Mr. commenced his attendance at my school on and regularly attended the course of study till . He then intermitted his attendance until

He recommenced his attendance at my school on and regularly attended the course of study till . He is therefore qualified for his final or (first) examination."

Mr. Harpley drew attention to the letter from Prof. McCall which appeared in the last number of the *Veterinarian*, and to the foot-note which stated, "*This letter is published at the request and on the responsibility of the Enquiry Committee of the Royal College of Veterinary Surgeons.*" He asked if it was the fact that the Enquiry Committee had made such a request.

The Secretary read the letter which he had sent to the editor of the *Veterinarian*, enclosing Professor McCall's letter: "Dear Sir,—I am desired by the Investigation Com-

mittee to forward the enclosed letter,which Professor McCall wishes to have inserted in the *Veterinarian*."

Professor Simonds said he had deemed it essentially necessary to insert the foot-note for his own protection, and he had read the letter from the Secretary as a request from the Committee to insert Professor McCall's letter.

Mr. Fleming said that on several occasions statements had been made at the Council Board which had not appeared in the shorthand-writer's transcript of the notes. As this was not parliamentary, and frequently was most unjust to persons not present, he considered that the shorthand-writer should not be interfered with in the performance of his duties, and that every statement made at the Board having reference to important matters should be taken down and copied, and appear in the transcript, and the gentlemen who made these statements should not be allowed to expunge what they did not wish to appear. No statements should be made there which would not bear publication.

Professor Simonds expressed his full accordance with these views.

On the motion of Mr. Harpley, seconded by Mr. Greaves, the report was received and adopted.

The Registrar read the obituary list.

250 copies of the Register and 200 diplomas were ordered to be printed.

Mr. Fleming recommended that in the Register opposite the names of those gentlemen who had held office in the Council, the dates when they so held office should be inserted, and the Registrar was directed to get the printer's estimate for so doing.

The report of the House Committee was received and adopted.

The report of the College Fund Committee was received and adopted, and it was decided to send round circulars to the members of the profession appealing for further funds.

The report of the Finance Committee and the Treasurer's report were read.

Mr. Harpley said that he had signed the financial report as chairman of the Committee, but he could not pledge himself for the accuracy of the figures, as he had no opportunity of comparing them with the Treasurer's book. The Treasurer was unfortunately in ill-health and was unable to attend.

The report was received and adopted. Cheques were ordered to be drawn for the current expenses.

Professor Simonds brought forward the President's motion for altering the hour for holding the annual meeting from

one o'clock to twelve, but after some discussion it was decided that no alteration should take place.

Mr. Fleming's notice of motion was next considered.

Mr. Fleming said that for a number of years it had struck him that the veterinary profession in this country had not made the advance either in scientific or educational acquirements which the times demanded. Veterinary science had been kept very much in the background, and the public had for many years regarded a veterinary surgeon very much in the light of a farrier. At different times attempts had been made to remedy this state of things, and undoubtedly of late years some trifling advancement had been made, and a preliminary examination had been instituted which gave a guarantee that a candidate was able to some extent to read and write his own language. This advancement, however, was by no means so great as it might or should have been. The time allotted to students in the different schools was much too short; it was absolutely impossible for even a man of the highest education to acquire a sufficient knowledge of the various branches of the profession during the brief sessions that were now held. How must it be, then, with half-educated youths, who, ignorant of Latin, Greek, or physics, have to acquire notions of a scientific and most difficult profession in about a twelvemonth's attendance at a veterinary school? The thing is absurd on the face of it; and when we took this fact into consideration, we could scarcely wonder at the profession being held in such low esteem, and its just claims ignored. Jealousy, narrow-mindedness, and illiberality were always associated with defective education, and the history of our profession in this country would show to what an injurious extent these had operated in checking advancement. Nothing has been done to encourage zeal or enterprise in forwarding the objects of veterinary science, and in this and many other respects we unfortunately stand apart from all scientific bodies. At present it was no unusual thing to hear competent men say—"It is no use our thinking about keeping up our knowledge because there is nothing to look forward to, and no inducement to continue our studies." He thought the time was come when the Royal College of Veterinary Surgeons, as the University of the profession, might establish Fellowships or other degrees, which should be a really scientific test of a man's fitness to represent veterinary science, and to practise veterinary medicine. The examinations for these degrees ought to be of a searching and much more severe character than that now enforced for the degree of membership, as a guarantee to the public of their value;

and if honorary degrees were conferred at all they should be very limited in number, as the system of giving honorary qualifications was liable to every kind of abuse, and in the majority of cases was rather a means of jobbery and exhibiting favoritism than a criterion of ability or even mediocrity. In fact, the degrees should, except, of course, those of an honorary kind, be granted only after an examination which should test not only the general educational acquirements of the candidates, such as a member of a learned profession should possess, but also ensure that their scientific knowledge is something more than mere cramming. The want of education, general and scientific, had been the bane of our profession in this country; and until this grave deficiency was repaired, we could not hope to take that position among scientific bodies which our most valuable and always interesting science entitled us to. If some such higher degree were instituted it would be an incentive to study, and would do away with the necessity for having medical men as teachers in the different schools, or examiners at our examining boards. Veterinary surgeons ought to be able to teach their own students and to represent their own science on either Royal Commissions or at Veterinary Congresses; for nothing could be more degrading or humilating than the confession which we ourselves make, that we are incompetent to do so; and nothing could more plainly demonstrate the absence of progress in our profession during its more than eighty years' existence in this country.

Mr. Cox agreed with Mr. Fleming as to the desirability of instituting a Fellowship, and proposed that his most judicious remarks should be published *in extenso*.

Mr. Greaves coincided in the same view, but urged that practical as well as theoretical knowledge should be attended to.

Mr. Harpley expressed the pleasure he felt at hearing the views which Mr. Fleming had put before them, and recommended that the Council should endeavour to obtain a supplemental charter which would enable them to establish a Fellowship.

Colonel Sir F. Fitzwygram suggested that a Committee should be appointed to carry out Mr. Fleming's views. He was inclined to go even further, and to recommend that in lieu of the one pass-examination, students should be required to undergo a first-class, a second-class, and a pass examination.

Mr. Gowing urged the necessity of testing the practical fitness of a man to enter upon the profession.

Mr. Fleming thanked the members of the Council for the

hearty response they had given to his suggestions. He was perfectly sure that many young men who had joined the profession were not satisfied with the examination they had undergone, and would be glad to submit themselves to an examination for a higher degree. As to the danger of a veterinary surgeon possessing a classical education, we had no experience to guide us in the matter; but there could be no doubt that a student should know the derivation of the terms which he was every day compelled to employ, and something of the languages from which these terms were derived. In this respect alone medical students, and even druggists' apprentices, were far ahead of us.

The Chairman recommended that if a Fellowship were instituted the candidates should be tested more stringently as to their general mental culture.

Col. Sir F. Fitzwygram's motion for the appointment of a Committee was seconded by Mr. Harpley and agreed to.

The following gentlemen were appointed members of the Committee, two to form a quorum:—Col. Sir F. Fitzwygram, Mr. Fleming, Mr. Harpley, and Mr. Field.

The report of the Committee on the subject of the "Fitzwygram prizes" was read and received.

Col. Sir F. Fitzwygram asked the Council to name a date on which the examination for his prizes should take place. It would be necessary to hold them as soon as the Edinburgh examinations were completed. Those examinations would be finished on the 17th, and probably Monday the 19th would be the most convenient day. He had been talking with Professor Simonds, and found that he had been under the impression that the students who obtained their diplomas were not eligible to compete for the prizes, and that consequently there would be no competitors from the London College. Certainly that was not the impression which the document was intended to convey. He therefore asked that the Secretary might send a circular to all those students who had obtained their diplomas, informing them that they were eligible for the examination.

The Secretary stated that he had received a letter from Professor McCall desiring him to say that he did not think any of the students attending the Glasgow College would be eligible for competing for Col. Sir F. Fitzwygram's prizes at present.

The Chairman asked if the questions put to the competitors were to be written or oral.

Col. Sir F. Fitzwygram said there would be a written examination at Edinburgh, Glasgow, and London, and the

six best men would be brought up to London to compete in a practical *viva voce* examination.

Mr. Fleming said it was most desirable to ascertain how many candidates were likely to present themselves, in order that too many papers might not be printed, and thereby prevent the secrecy which it was absolutely necessary should be maintained.

On the motion of Mr. Fleming, seconded by Mr. Harpley, it was agreed that the 100 guineas given by Col. Sir Frederick Fitzwygram should be divided in the following manner:—1st prize, 50 guineas; 2nd prize, 30 guineas; 3rd prize, 20 guineas.

It was decided to ask Dr. Dunsmure to select superintendents to conduct the written examinations in Scotland.

The preparation of the annual report was left to the President and the Secretary.

Mr. Alexander Cope and Mr. George South were appointed auditors.

It was decided to hold the annual dinner at the Albion Hotel, Aldersgate Street, and the President, Mr. Moon, and Mr. J. C. Broad were chosen to form the Dinner Committee.

Mr. Fleming, on behalf of Col. Sir Frederick Fitzwygram (who had left the meeting), gave notice that at the next quarterly meeting he would propose an alteration in Bye-law 26 to the following effect:—"Two examinations shall be held in each year, in April and December." He would also propose an alteration in Bye-law 31, to the following effect:—"No student shall be eligible for the second or final examination until he has attended at least one winter and one summer session after passing his first examination."

Permission was given to Mr. Fleming to borrow a number of specimens and models for use at a lecture which he was about to give at the Society of Arts, in May.

A vote of thanks was given to the Chairman, and the proceedings then terminated.

SPECIAL MEETING OF COUNCIL, HELD 22ND APRIL, 1875.

PRESENT: The President. Messrs. Moore, Harpley, J. C. Broad, Field, Woodger, Colonel Sir Fred. Fitzwygram, and the Secretary.

The Secretary read the notice convening the meeting.

The minutes of last meeting having been read and confirmed,

Mr. Harpley said he begged to draw the attention of the

meeting to the remarks that fell from one of the members at the last council meeting, with reference to a special bye-law being framed with a view to meet the difficulty that has arisen with regard to the few students who had come up for the examination in Scotland. He thought that no examination should take place unless a certain number of students presented themselves for such examination, the number to be hereafter considered. It would also be well if this matter was also considered with reference to the students presenting themselves from the English school.

Upon the question of the Charter of Incorporation granted to the Royal Veterinary College,

The President, in reply to Mr. Harpley, stated that a complete copy of the Charter had been promised, though not yet obtained, from the Royal Veterinary College.

Correspondence.

Letters were read from Professor Simonds and Mr. J. R. Cox, giving their reasons for their inability to attend the meeting.

The following letter was also read relative to the "Fitzwygram prize":

Royal Veterinary College,
Camden Town, N.W.
April 14*th*, 1875.

Dear Sir,—I beg to inform you that your letter of the 18th ult., and also a printed circular of the 9th instant, referring to the examinations for the "Fitzwygram prize," were yesterday laid before the Governors of the Royal Veterinary College.

I am directed by the Governors to draw your attention to the fact that in the original paper—the letter of the 18th ult., in which the particulars of the prize were given—it was stated that the students of the several schools were alone to be competitors, whereas it is now proposed to extend the examination to veterinary surgeons who have recently obtained the diploma of the Royal College of Veterinary Surgeons.

As these gentlemen are no longer students they are necessarily beyond the pale of the Governors of the Royal Veterinary College.

I am, &c.,
(Signed) Jas. B. Simonds.

W. H. Coates, Esq., Secretary,
Royal College of Veterinary Surgeons.

A letter was read from the Scotch section of the Examiners

of the Royal College of Veterinary Surgeons, dated Edinburgh, 20th April, 1875, giving a detailed account of the examinations, from which it appeared that the examinations were finished in Glasgow on the 17th inst. From the Edinburgh schools 18 students were candidates for the diploma, 10 being from the New Veterinary College, and 8 from the Clyde Street College. Of these 18, three were rejected, one from the New College, and two from the Clyde Street College. From Glasgow, 13 were examined for the diploma, and three were rejected. Of the four students who came up for the minor examination, two were not allowed to pass.

The Report of Examinations

was read by *the Secretary*. It stated that at a meeting of the Scotch section of the Court of Examiners held in Edinburgh, April 15th, nine candidates passed and one was rejected. On the 16th April, six passed and two were rejected. At a meeting held in Glasgow, April 17th, 1875, of the students who presented themselves from the Glasgow Veterinary College for the Pass Examination, 7 passed and 2 were rejected. At a meeting held the same day, the same Examiners present, 3 passed and 1 was rejected, making a total of 10 passed and 3 rejected.

The report further stated that two candidates presented themselves for the "First examination," both of whom passed. Two candidates who had been previously examined in July were rejected.

The Secretary called the attention of the Council to the fact that Mr. Wilkinson, who was recently elected Examiner, had not attended at the examinations, and that no note had been made of the circumstance by Dr. Dunsmure.

Mr. Field moved that the Secretary be instructed to write to Dr. Dunsmure as to the cause of Mr. Wilkinson's absence.

Mr. Harpley seconded the motion, which was agreed to.

Mr. Harpley said he should call the attention of the Council at the next quarterly meeting to the pecuniary loss the Council had sustained by that examination.

The Secretary read a statement from Dr. Dunsmure of the receipts and disbursements connected with the examinations, from which it appeared there was a balance of £68 12s. 8d. due to the Honorary Secretary at Edinburgh.

A cheque for the above amount was ordered to be drawn and forwarded to Edinburgh.

The Secretary then read the Annual Report, which the Council proceeded to consider.

As there seemed to be some doubt in the minds of the members present as to who were the proper candidates for the prizes proposed to be awarded by Col. Sir F. Fitzwygram,

Col. Fitzwygram suggested that for the sake of perspicuity the following clause should be inserted in the report: "That prizes are open to all who have been students of any recognised veterinary college during the session immediately preceding the examination."

This suggestion having been accepted,

It was moved by *Mr. Broad*, seconded by *Mr. Field*, and unanimously carried, "That the Report be received and adopted."

The Auditors' Report then came up for consideration.

Mr. Broad proposed, and *Mr. Moore* seconded, "That the Report be received."

The motion was carried.

On the motion of *Mr. Field*, seconded by *Col. Fitzwygram*, the report was unanimously adopted.

This concluded the business.

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL ASSOCIATION.

The Annual General Meeting was held in the London Hotel, St. Andrew's Square, Edinburgh, on Wednesday, 3rd March, at half-past two o'clock.

Present:—Professors Williams and Walley; Messrs. Baird, Black, Young, Robertson, Borthwick, Aitken, Balfour, Cumming, Rutherford, and the Secretary. Colonel, Sir Frederick Fitzwygram and Messrs. Macfarlane and Berkeley were also present as visitors. Letters regretting absence were received from several members of the profession at a distance. Professor Walley was elected President, and took the chair.

Mr. Richard Rutherford, M.R.C.V.S., Edinburgh, was elected a member.

Professor Walley then addressed the meeting as follows:—

GENTLEMEN,—In the address I am about to read to you, I propose to take a general glance at the progress (political and otherwise) of our profession, both from a retrospective and a prospective point of view; at the same time I shall make a few remarks on the uses and benefits of Veterinary Medical Societies. As the field I have thus mapped out is a wide one, each subject must necessarily have devoted to it but a cursory attention.

Naturally, the first matter which claims our attention is our representative body and its doings. The Council of the Royal College of Veterinary Surgeons, supposed, as I have above indicated, to be the Parliament of our profession, is so composed as to throw all the power into the hands of but a very small section of the whole body, and that section, from the very method adopted in its election, is *anything* but a representative one.

Living as the great majority of veterinary surgeons do at a long distance from the metropolis, it is impossible that many of them can be present at the annual election of members of Council; a variety of causes are in operation to bring about this state of things. Some cannot leave home because they have not time to do so, others because they have no trustworthy persons to leave in charge of their practices, and others because their practices are not sufficiently lucrative to enable them to afford the expense involved in a long journey—such as that from a distant province to London. To obviate this, several schemes might be adopted. 1st. The United Kingdom might be divided into districts, large or small according to the number of practitioners resident therein, and each district should elect its representative, whose expenses (to avoid invidious comparisons) should be paid by the local association. 2nd. Each district should elect, in addition to its actual representative, a gentleman residing within an easy distance of London who would be able to act as proxy, and press upon the Council the views of the district veterinary surgeons for whom he was acting.

Another plan, and I think a feasible one, would be for the Council to submit all questions of importance which might arise to the test of a plebiscite. It has been suggested that the Council meetings should be held alternately in the principal towns of Great Britain; to this plan many objections might be urged, and I for one could scarcely consider such a proposition favorably.

With the past action of the Council I cannot express myself satisfied. It has certainly not been conciliatory, and however much in point of law it might be justified in the course taken with reference to the examinations under the new system of students who joined the colleges under the old rules, it cannot be said to be justified in equity. A retrospective view of such matters as these is always to be condemned, in every case a prospective view is the more liberal and just; the former alienates, the latter attracts. You are all, I have no doubt, aware of the steps which have been taken by the Governors of the Royal Veterinary College to obtain an independent charter to enable them, among other things, to grant honours in veterinary medicine and surgery beyond that of M.R.C.V.S. As to the desirability of members of the profession possessing distinctions of this kind,

no two opinions can for a moment exist; but as to the mode of obtaining or awarding them, great differences of opinion must necessarily be held; and I think the great majority of us (at any rate those who wish to preserve the unity of our profession) must acknowledge that such honours should be universal in their application, and should only be granted by the common licensing body of our profession, viz., the R.C.V.S.

I have long seen the necessity of, or rather the benefit to be derived from higher degrees, and have at different times urged the matter upon many of my professional brethren, and you will remember that, at a not very distant date, the university of Edinburgh came very near to the institution of such a degree in veterinary medicine and surgery, but from some not well-understood cause the thing collapsed, and it now stands on the university calendar as one of the advances "that was to have been made."

If we look at the use of our Parliament in suppressing quackery we find it lamentably deficient. All that it can do is to inform Mr. So-and-so that Mr. Somebody-else is not a member of the R.C.V.S., a thing which the inquirer might have discovered for himself if he had taken the trouble to consult the register of the College. In this respect we are in a somewhat similar, and in equally as anomalous a position to that occupied by the members of the established Church of England, *i.e.*, there is no prosecuting or responsible body; hence men appropriate the title of M.R.C.V.S., and practise under its fostering wing with perfect impunity, there being no one—a fact with which they are perfectly familiar—to say them nay; their neighbours hesitating to prosecute because their action would be attributed to wrong motives, the members of Council refusing to prosecute, 1st, because there is no penal clause attached to the charter; 2nd, because they have no funds wherewith to meet the necessary expenses. Would it be deemed possible that in this city a respectable firm could be found ready to print forged diplomas? Yet, and I must acknowledge it with some shame for the integrity of the honour of our countrymen, it is perfectly true.

In order to advance, all our energies should be concentrated upon the attainment of one object, viz., the addition of a prohibitory clause to our present charter. Before, however, this is attempted it is absolutely necessary to abandon the prospective policy, hitherto followed by the Council; all holders of the Highland and Agricultural Society's certificates, and all well-known and respectable—though unqualified—practitioners should be admitted to our ranks under certain simple conditions, and the more humble claimants to veterinary knowledge is left to die a natural death before any other step is taken in this direction.

Closely connected with the extension of the charter in the direction I have indicated is the education of our students. When I first broached the matter of the division of subjects and of examinations to my colleagues, I was pleased to find that in this respect we were of one mind. I was still further gratified by the fact that not only did my colleagues warmly support the idea, but that the Council of the R.C.V.S. gave in their adhesion to it. During my college career I was forcibly struck with (consequent upon the number of subjects to be learnt) the superficial character of veterinary education; I was still further impressed with this fact on recommencing the study of anatomy in 1871, and from that time I determined upon forcing the matter upon the attention of the profession. That the division of subjects, and the extension of the curriculum were steps in the right direction, every-day experience confirms more strongly, but the measure was not sufficiently radical, in fact, the good it was hoped it would accomplish and the relief it was thought it would afford to the student, have in some degree been stultified by the addition of one more subject, viz., botany; while the extension of the time was only a paltry two months. I have said that the measure was not sufficiently radical, and I think it is now patent to all that the strides which have been recently made in pathology and other branches of veterinary education, and the more rigid character of the examinations render the addition of another winter or summer session to the curriculum an absolute necessity. I may even go farther than this, and say that the intending student should possess a good knowledge of natural history and physics; and an elementary knowledge of botany, chemistry, and histology before entering a school, and that in no instance should a diploma be awarded until the aspirant to this honour has proved himself to possess a thoroughly practical knowledge of his profession. I care not how this knowledge is gained, but I certainly think, and I have endeavoured to impress the idea upon both students and their parents, that one session should be first spent at college, and then an arrangement made with a qualified V.S.—in the intervals of technical study—for seeing practice. In this way the young veterinary student would have his ideas enlarged, and obtain that most necessary qualification for the successful prosecution of every business or profession, viz., *tact;* a want of which so often causes young men to fail not only in their own, but in the eyes of the general public. Many young men think that the *summum bonum* of their existence is the coveted diploma, forgetting that the mass of their future clients will look upon it as only waste paper if they do not succeed in proving themselves to be possessed of the qualifications which it sets forth. In

this way a great number may be said to go headlong to ruin, and soon find themselves bitterly humiliated and cast down.

What are the signs that our profession is advancing? They are numerous—among them I may mention the enforcement of a matriculation examination, though it is not by any means what it should be; the extension of the curriculum of study with the introduction of a new system of examination of candidates; the general desire manifested for the granting of a higher degree than that of M.R.C.V.S.; the demand which exists for veterinary surgeons to perform the duties of inspectors under the Contagious Diseases Animals Act,—a service which, with judicious selections and appointments, ought to become an exceedingly popular one with veterinary surgeons, and of great benefit to the public—the scarcity of army candidates; the anxiety shown by the illiterate of our profession to educate their sons; the increasing demand for veterinary surgeons in the Colonies and by private firms at home; the establishment of veterinary schools in the United States, and the proposed starting of a veterinary journal in that country; the proposed establishment of a veterinary school in Australia; and last, but not least, the encouragement given to students by various bodies and private individuals in the way of bestowment of honours and prizes; amongst which we must not forget the very generous offer so recently made by Colonel Sir F. Fitzwygram. I imagine that one source of danger to the sister profession is not likely to creep in with regard to our own. Women may so far unwomanise themselves as to follow the practice of medicine, but they are not likely to still further lower the attributes of womanhood by cultivating veterinary science.

The relation of the Legislature to our profession *is not* satisfactory. "The powers that be" do not trust sufficiently to the aid of veterinary surgeons in their endeavours to check the spread of animal plagues, and what little scope is afforded to veterinary practitioners to exercise their powers and avocations in this direction is so trammelled by conditions as to practically render them simply automatons. What has the Legislature, with all its cumbersome machinery, done to check the spread of pleuro-pneumonia in cattle? Little or nothing. Give the matter into the hands of a responsible body of veterinary surgeons, and I have little doubt that in a very short time the disease would be unknown. The want of practical knowledge possessed by those in office is well illustrated by their action in connection with the issuing of thermometers to inspectors; these instruments are in many instances put into the hands of men who know nothing whatever about them, without the slightest instruction as to their use. It is not long since one old veterinary surgeon from the extreme north of Scotland came to the College seeking for in-

struction in the use of the thermometer, as he had been ordered to get one, but had no idea how to use it. While speaking of this matter I may as well refer to the utter failure of the endeavours on the part of the authorities to check the progress of one disease, viz., pleuro-pneumonia, with the laws governing the spread of which we are all so familiar. This is strikingly exemplified in our own city, where the disease is as rife, if not infinitely more so, at the present time as it ever was. Indeed, the city is a focus for the extension of the malady to surrounding districts. Pleuro-pneumonia will never be arrested until far more stringent measures than those now in force are adopted. Some time ago Mr. Stewart of Perth suggested the branding of all animals which had been in contact with diseased ones. I would superadd to this the licensing of all dairies and the registration of every animal kept herein, with a view of preventing the possibility of animals which had been exposed to the contagion being mixed with those which had not. I cannot further indicate the other steps which are required to be taken in this matter, but I will remark that the observance of more cleanliness, the doing away with old wooden shippons, and the more extended use of disinfectants are absolutely demanded. Cowkeepers want saving from themselves, and if the subject were put before them in its proper light they would soon acknowledge that they had been following a suicidal and mistaken policy. There is one question connected with pleuro-pneumonia which, so far as I know, has never received *any* attention on the part of the authorities, and *very little* from the profession, and that is as to whether or not an animal which has suffered from pleuro-pneumonia and has apparently recovered is capable of propagating the infection during the subsequent tissue changes in the diseased lung. I am strongly of opinion that this can be done, and I draw my main argument from the fact that the temperature in such cases is nearly always as high as 103°, and that the slightest exposure to excitement or to a heated or contaminated atmosphere is sufficient to redevelope febrile symptoms. I have spoken of late to many of my brethren on this subject, and the majority seemed to possess a latent conviction that I was right in the supposition I have here expressed.

Of the advance of veterinary literature we have not much to boast, as, with the exception of the reprint of Mr. Finlay Dun's work on Medicine, Professor Williams' work on Surgery, and Mr. Fleming's various productions, comparatively little has been, of late, accomplished in this direction, and the tone of current veterinary literature is certainly not elevated. For this we must not, however, forget to lay the blame the blame on those to whom, in a great measure, it is justly due. Before the establishment of veterinary medical societies, interesting and instruc-

tive cases were recorded; now they are related at meetings, and but a very small portion of them, or the discussions to which their relation gives rise, finds its way into print, points of great importance being passed over as if not worth attention: in this respect the comparison with similar reports in the *Lancet* and other medical journals is very striking.

Very frequently, too, much discussion and time are wasted on such questions as priority of inventions and ideas, which might be better utilised: ideas and discoveries, in all branches of study, are often simultaneous in different minds, at different points of the globe, and at different periods of time.

Mr. Puff in Sheridan's comedy of "The Critic," being blamed with pilfering an idea from Shakespeare, modestly says: "It is unfortunate that Shakespeare and myself had thought the very same thing, and that Shakespeare should have anticipated me." And, as in professional, so in non-professional life, one man believes, and asserts, that writing has been only familiarly practised for *so many* years, another man turns up a Moabitish stone covered with hieroglyphics, and proves that the art was known and utilised as early as the 8th century B.C., or perhaps earlier; strange that things which are in use to-day should be cast aside, perhaps for generations, until some one or other picks them up, and revivifies and reburnishes them, and presents them to the world as his own especial progeny, much in the same way as we pick up an old corroded, blackened, defaced, and damaged silver coin, and polishing it give to it an apparently new face.

If I invent an improvement (or what I consider one) in hobbles or a tooth chisel, I am told that it—or a modification of it—was in use a long time ago. Blackley brings out a "pollen grain" theory; Wilson gave to the world a similar theory two or three years before.

Esmarch brings out his practice of bloodless surgery in 1871. Sir Chas. Bell says in one of his works, "I may here observe that by the management of the tourniquet blood may be gained. If the limb is uniformly rolled before amputation the veins are emptied into the general system, and blood is saved instead of being withdrawn. In a very exhausted state of the patient it may be of service to attend to this."

In operations upon the limbs of horses it has long been a practice to put on a rough tourniquet in the shape of a bandage.

Mr. Broad invents a laminitic shoe, the same shoe was known in Liverpool though not applied in the acute stages of the disease as the *bumble-footed shoe* in the memory of the oldest shoeing smith; the treatment of laminitis by forced exercise has been practised by many carters in Leith from time immemorial,—but Mr. Broad repopularises and combines these two methods, putting

together two links in a chain, but nevertheless only duplex reiterations of "what has been done."

Our progress in pathology is slower than it should have been. More, certainly, is understood about blood diseases than heretofore, and their classification can be materially simplified by looking upon them as due either to an upsetting in the balance of the constituents of the blood or to a depraved or deteriorated condition of that fluid. Thus we have diseases produced by an increase in certain saline and in the aqueous portions of the blood, marked by anæmia, effusions, exudations and extravasations, as hæmo-albuminurea in cattle; sanguineous ascites in sheep; diabetes in the horse; purpura hæmorrhagica; purpura urticans in the horse and dog; blain in the ox, and inflammatory œdema, and œdema of the bowels in the horse. Many of these affections can be distinctly traced to a superabundance of certain materials in the blood; thus, red water both in cattle and sheep is due to the alkaline phosphates, the two diseases being exactly identical; the difference in the prominent symptoms, viz., in hæmo-albuminurea in cattle, and sanguineous ascites in sheep, being more apparent than real. Sero-sanguineous effusion in the former case is not confined alone to the kidneys, but is seen to take place into the tissues and the cavities. A remarkable fact in connection with the urine of red water in cattle is, that it resists putrefaction for a very long period—one specimen forwarded to me by Mr. Dewar, of Midmar, I kept perfectly free from putrefactive odour for twelve months, when it was unfortunately thrown away.

Diabetes in the horse is often produced by excess of nitrate of soda in the fodder, its use as a manure being now greatly extended. The so-called lymphangitis, the various forms of purpura, and œdema of the bowels (which is often confounded with enteritis, especially when the colouring matter of the blood is dissolved out of the red cells and dyes the submucous connective tissues), are traceable to similar causes—the location of the effusions in the different structures being accidental, and not governed by any fixed law—the condition of the lymphatic vessels and glands observable in some of these diseases is only secondary, and may be seen in mammitis, in strangulation of the bowels, twist of the uterus and epizootic pleuro-pneumonia. The rapidity with which effusions and also physical alterations in tissues can take place is well exemplified in choking, in cattle and in turnip braxy (albuminous effusion) in sheep. (2). Diseases produced by a depraved or deteriorated, or both combined, condition of the blood; tending to death of that fluid in some instances, and to sphacelus and ulceration of the parts in which the lesions are located; and degeneration of the exudates and new

formations in others. Many of these diseases—as splenic apoplexy, hæmatozymosis, hæmatosepsis and malignant parturient fever—are often marked by true hyperæmia, with an excess of carbonaceous or nitrogenized material, and by the presence of bacteria—prior to, or immediately after, death—in the blood; the part played by bacteric organisms, in determining the amount of evil produced by the introduction of such blood into the systems of healthy animals was accidentally illustrated last summer with some splenic-apoplexy blood forwarded to me by Mr. Edward Stanley, of Warwick. A portion of this blood was given to a dog by the mouth, and a small portion introduced underneath the skin; no evil effects followed, and I was consequently led to examine the blood microscopically. On doing so I discovered the entire absence of bacteria, and at the same time detected the odour of carbolic acid in the bottle which had contained the blood.* Amongst those diseases which are marked by exudation, and a tendency to degeneration of the exudate, we have a most prominent—specific synovitis or joint-ill in young animals, which can always be traced to a deteriorated or depraved state of the blood of the dam, as the result of improper feeding and management, and in lambs at least is never scrofulous in its character.

One fact in connection with blood diseases is worthy of passing notice; I allude to the breaking-down of the line of demarcation between blood affections and contagious and infectious diseases, by the assumption in some instances of contagious characters by the former, as is seen to occur in splenic apoplexy —some cases, illustrative of this, were brought under my notice two years ago, many valuable animals falling victims before the true cause of death was suspected.

Our knowledge of certain specific diseases has advanced. Thus, with the nature of tubercle we are better acquainted; and in proof of its specific character we have, in addition to the experiments of Chauveau (which have proved the opinion as to the propagation of the disease by ingestion, advanced by me at Glasgow, to be something more than an hypothesis), the remarkable testimony of Grad, as shown in the recent article in the *Veterinarian* on tubercle by Mr. Geo. Fleming, clearly establishing the infectious and contagious nature of tubercle. *A propos* of this subject I cannot refrain from expressing the astonishment I recently felt on reading (in the pages of the *Lancet*) the report of a trial for the exposure of diseased meat at Chinley, the opinion expressed by two veterinary surgeons that tubercle in

* The circumstance I have just related unexpectedly justified a method of preventing blood diseases adopted by me ten years ago, viz., the internal administration of carbolic acid and charcoal.

man and animals was not analogous. With all deference to those who hold contrary views upon this point, I must again express my decided opinion that the disease in the human subject is in every respect identical with that which exists in cattle and other animals. We have the same mode of formation, the same degenerative processes, even to ulceration, when situated in the lungs, and the same results in each case; and looking at the fact that we are dealing with a specific disease in which the whole of the system is more or less contaminated, and at the further fact that flesh is often very improperly cooked by the poorer classes, who are usually the purchasers of inferior meat, no dubiety should exist in the minds of sanitary inspectors on the subject; to say the least, the idea of consuming such food is revolting, and in many cases it undoubtedly produces ulterior evil effects in the system of the consumer, as diarrhœa, and the eruption of boils, papula, or pustules on the skin.

Much has not been added to our knowledge of tetanus; the usually received explanation of the cause of the traumatic form, viz., the infliction of a wound, is to my mind anything but satisfactory. Many arguments, had I space, could be adduced to prove that the wound which is *sometimes* a concomitant of tetanus is only an exciting cause, the actual one being in operation, although not previously obvious.

I have one case of idiopathic tetanus at present under treatment which is gradually recovering, the symptoms disappearing in the same order as they were developed. The medicines administered have been chloral hydrat., belladonna, and bromide of potassium, followed by arsenic, nux vomica and gentian. Throughout the attack the pulse has been intermittent, but whether this is due to the disease, or was in existence previously, I am not in a position to decide.* Depilation, especially about the arms and shoulders, is taking place extensively; probably it is due to the bromide of potassium.

That nervous affections are on the increase is an undoubted fact; chorea in the dog, louping ill in the sheep, and shivering in the horse (the two latter only modifications of the former) being far more common than heretofore. The causes of this, in the case of shivering in the horse, are palpable; and may be referred to the greater weights placed behind horses and the greater amount of exertion demanded from them in hauling their loads. The same causes will also account for the increased number of heart lesions witnessed in draught horses at the present day.

* This animal has now, April 1st, perfectly recovered from the tetanic attack, but the pulse continues to intermit.

With that hitherto comparatively little known disease, lymphadenoma, we are all becoming more familiar. Two good instances have recently come under my notice, the one corresponding to the leukæmia, the other to the lymphadenoma, described in Green's 'Morbid Pathology;' the former is the case to which Mr. Baird referred at your last meeting, the prominent features of which were the presence of the purpuric spots in the membrane of the mouth (by a microscopic examination of the blood contained therein, and by consideration of the concomitant symptoms we were enabled to form a correct diagnosis in the case) the universal distribution of the hyperplastic, and heteroplastic growths; the peculiar green colour of the egesta, the watery character of the blood, the superabundance of white corpuscles in the mesenteric blood, effusion into the abdominal cavity and pericardial sac, and the invasion of the plexus choroides of the fourth ventricle by the lymphomatous growth. The latter is a case which occurred in my own practice, and which had been under my care for some three months for fickle appetite following an attack of low fever, which, in the absence of any assignable cause, I attributed to some occult disease of one of the internal organs, as the liver or spleen, or both. The marked peculiarities in this case were, that the animal did not materially lose condition, performed a fair amount of work, always looked healthy in his coat, and that the cause of his death was sudden and unexpected extravasation of blood upon the brain. I saw him on the 7th, and on the morning of the 9th of April he appeared dull, did not perform his work well, and refused his food; my attention was called to him at 4 p.m., and from the symptoms then presented, I came to the conclusion that gastric phrenitis was about to be developed. He rapidly became worse, was very violent and dangerous; about nine o'clock the iris was insensible to the stimulus of light, and catoptric examination revealed extensive retinitis. Coma followed, with intervals of sensibility and violent convulsive spasms, which were kept in check by the hypodermic injection of morphia and the internal administration of chloral; he died at 11 p.m. *Post-mortem* examination revealed hypertrophy of the spleen, which was about twelve times its natural size, its parenchyma healthy, its capsule thickened to the extent of one quarter of an inch by lymphoid deposition, the liver hypertrophied, and right lobe (as also right ventricle of the heart) undergoing fatty degeneration. The whole of the lymphatic glands lymphadenomatous, œdema of the submucous connective-tissue of the cœcum with mucous and submucous thickening in the stomach. On opening the cranium, a quantity of turbid fluid escaped, there was extensive congestion of the vessels and extravasation

of blood on the surface and at the base of the brain, with sero-sanguineous effusion in the latter situation, the plexus choroides of the fourth ventricle being bestudded with numerous lympho-matous growths. An examination, microscopically, by Dr. McKendrick, further confirmed my view of these granulations, some of the arteries having undergone calcareous degeneration, others being disintegrated. In the eye the ramifications of the arter iacentralis retinæ were charged with blood, while small diffused hæmorrhages had taken place between the middle and inner coats of the eye. A sketch of this I have the pleasure of introducing to your notice.

In some respects this disease is analogous to miliary tubercle in other animals; especially is this the case in its universality of distribution and in its tendency to involve serous membranes. It differs from tubercle, however, in being homologous in its character, and tending to organative rather than to degenerative processes. Many of the masses in the spleen in Mr. Baird's case were hyper-vascular, some had melanotic deposits within them, and in a few instances small blood-glands were deve-loped.

No additional light has been thrown upon the pathology of parturient apoplexy in cows, and notwithstanding the attempts which have been made to disprove my anatomical theory of the causation of this disease, I hold that it is the only rational explanation of the prevalence of these attacks in cows.

Gentlemen, I think you will agree with me that the past year has been remarkable in the absence of zymotic disease amongst horses. Since the Christmas of 1873 I have only had one outbreak of this character to deal with. This was confined to one stable, and was traced by the aid of Mr. Macallum, V.S. (who was conversant with their arrangement) to the drains and cesspools of the establishment. With one or two exceptions these cases were ushered in with colic; they partook of true recurrent characters, were remarkable from the pulse being intermittent and continuing so even after convalescence; the mucous mem-branes being of a peculiar damson-colour, the tendency to the formation of ante-mortem clots in the aorta and pulmonary veins, effusions into the lung structure, and in one instance sub-acute ascites. In diagnosis and in medicine progress has been slow; catoptric examination has become to me a valuable aid in forming an opinion as to the condition of the cerebral and spinal capillary circulation in affections of these organs, and also a guide to the method of treatment to be adopted. Abstraction of a small quantity of blood to regulate the admi-nistration of ammonia I have successfully had recourse to while the use of the microscope has aided me in the detection

of leucocythæmia and melanæmia. To our power of relieving pain in operations (with the exception of the extended use of chloroform) we have added little. The æther spray is invaluable in the performance of the minor operations; it can be utilized in castration by torsion, but not by cautery or ligature; neither can it be utilized in firing. We want a readily applicable and reliable local anæsthetic with which firlng iron can be used. Such an agent would be an invaluable boon both to ourselves and our patients.

Passing away from this part of my paper, I must briefly consider the condition and progress of veterinary medical associations.

While some have survived the general wreck, and have developed into full-grown manhood, others have, from causes which it would puzzle even their members to explain, been allowed to collapse and others have even yet not emerged from their chrysalis state or have been prematurely nipped in the bud.

Gentlemen, these associations should be a power, to be wielded for good in our profession. Neither the associations nor their funds should be used for personal aggrandisement or selfishness, nor for any extraneous purpose whatever. They should be the right hand of the Council of the R.C.V.S., and should be utilized in the extension of our boundaries and in the maintenance of our rights and privileges.

In the discussions which arise at the meetings, members should suppress any word or deed calculated to freeze ideas which may be dawning in the minds of others; dogma should find no place; dictation should be unknown; each should distribute the knowledge he has gained in life, not with a niggardly hand, but with an outstretched arm; not in a spirit of meanness, but out of an overflowing heart; not with a desire to mystify, but to enlighten. He who gives nothing to his neighbour cannot expect anything in return.

Every discussion should be free, but each individual should state his candid opinion upon all subjects brought forward; and no matter what that opinion may be, if it has been honestly arrived at, he should adhere to it and defend it until it is proved wrong.

The tenacity I have here indicated was well exemplified in the manner with which the late Mr. Haycock (with whom some of you, I doubt not, were acquainted) backed the opinions he had expressed. In his discussions he ever defended that which he advanced, no matter how exaggerated or erratic his ideas may have appeared to others—and I must confess that he often gave expression to very remarkable opinions—and it was to him, in a great measure, with Mr. Thomas Greaves and Mr. Peter Taylor,

that the liveliness, the instructiveness, and the real heartiness of the Liverpool meetings about the year 1865 were due. No more enjoyable scene could have been afforded to the lover of debate than that presented by Mr. Haycock when engaged in an interesting discussion; his keen satire, his cutting sarcasms, his caustic humour, his self-possessed manner, and his almost savage earnestness all combining to this end.

Well do I remember, in Manchester, being accosted by Mr. Haycock (after being engaged in a somewhat stormy discussion with him on a disputed point) with, "I dare say you will think me a rough uncouth fellow, but I mean no harm," to which I answered that I would not give two pence for the man who could not defend his own opinions, and a much smaller sum for the one who had none to defend. With the surplus funds of the associations, experiments and investigations into important subjects might be carried out by a committee appointed for that purpose.

Before concluding my address I must not omit to direct your attention to a society intimately connected with, and in some sense an offshoot of, veterinary medical associations—I mean the "National Veterinary Defence Society and Benevolent Fund." This society, established for the purpose of defending members against vexatious actions at law and in aiding decayed, or the widows and children of deceased, veterinary surgeons, has not received that support from the great body of the profession to which it is entitled. I had hoped, from the first day it was originated, that it would lead to the ultimate foundation of a "Home for Decayed Members and for Widows," and an "Asylum and Educational Institution for Orphans," but my hopes have not been realized. I see no reason why this should not be accomplished, and further, why a "Mutual Benefit and Accidental Fund," supported by increased annual payments, should not be added to it. There are not a few men in our profession to whom a subscription of £50 or £100 towards such an object would be a matter of no moment, while there are hundreds whose daily bread is earned by the sweat of their brow, and whose support depends, and that also of their wives and families, upon their health and strength; to such a small yearly sum would not be missed, while many an hour's anxious thought would be saved them if they knew that they would be preserved from distress if disabled from following their avocations.

The funds of the present society amount to nearly £1100. At its commencement in September, 1865, it possessed only 32 guineas. It rests with the profession to raise its funds to four or five times their present amount before 1885.

At the commencement of this paper I said that the notice I should take of some of the subjects upon which I intended to

touch would be brief. I hope that in the foregoing hurried remarks you will find some food for reflection, and that they may be the means of bringing forth useful fruit. Some of these ideas I may have given expression to elsewhere, but I think them of sufficient importance to bear repetition. At some future meeting I may, if agreeable to the members of the association, enter more fully upon some of the matters to which I have just now directed their attention.

Considerable discussion followed the reading of the paper.

Mr. Robertson, of Kelso, thought that what Professor Walley had said, relative to the constitution of the Council of the Royal College of Veterinary Surgeons, by representatives from the various districts of the country had been suggested before : and that Professor Walley seemed to forget that the Council had already given an opportunity to those holding the diploma of the Highland and Agricultural Society of Scotland to become members of the R.C.V.S. on very easy terms. He (Mr. R.) had been present at several of these examinations, which were mainly of a practical nature, and he thought that those gentlemen who had neglected to avail themselves of them, had only themselves to blame. With respect to the division of the examinations of the students into two periods instead of one, Mr. Robertson said he had never been very favourable to it, without an extension of the time of study. While at college he had found it very hard work to master even the nomenclature in several months; and that a student should become proficient in anatomy and the various other subjects after six or nine months' study, seemed to be asking too much. Until another winter session at least was added, Botany should be excluded from the July examinations, as its addition seemed to have detracted considerably from the good effect they might have had. There were several other matters in the Professor's paper which Mr. Robertson said he would have liked to have made a few remarks on, but time did not permit.

Colonel Sir Frederick Fitzwygram said that the status of the young veterinary surgeon depended very much on the examinations and the Examiners. The schools should not be allowed to dictate as to the standard of proficiency at these examinations, but the Examiners should fix it sufficiently high, and the schools would be compelled to follow and make their teaching equal to the demands made upon them. Were this done he believed the best results would follow. With every kind wish for the students he would yet like to see a good many more of them plucked.

The Secretary as one of the Examiners of the Highland and Agricultural Society, said that he had frequently experienced very considerable difficulty at the examinations, in deciding as to the

degree of proficiency necessary on the part of the students. He found them to consist of three classes—1, the very good, fit to pass any examination; 2, those clearly quite unfit to pass, and who of course were rejected; and 3, and by far the greater majority, the middling or fair class, and if one or two of the latter were allowed to pass it seemed very hard that the others should be rejected, and *vice versâ*. He feared that were the examination made more severe, a very large number indeed of those who at present came up for examination would be thrown back. And taking everything into consideration and as matters stood, he really thought the examination as presently conducted was sufficiently stringent.

The members after the meeting dined together and spent a very pleasant afternoon.

Mr. Rutherford kindly consented to read a paper at next meeting.

C. CUNNINGHAM,
Secretary.

Slateford, 18th March, 1875.

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL DEFENCE SOCIETY.

THE general meeting of the above Society was held at the Blackfriars Hotel, Manchester, on Wednesday, 10th of March, the President, P. Taylor, Esq., in the chair.

The minutes of the last general meeting, as well as the minutes of the various council meetings, were read and confirmed.

The Treasurer's balance sheet for the past three years was read and adopted:

THE NATIONAL VETERINARY MUTUAL DEFENCE SOCIETY.

The Treasurer's Financial Statement, 1875.

CASH RECEIVED.	£	s.	d.	CASH PAID.	£	s.	d.
Balance of Account, 8th Aug., 1871 . . .	396	5	11	Stamps, Circulars, Rent of Rooms for Council Meetings, Printing, Stationery, for 3½ years, to 1st March, 1875	5	9	6
Members' Subscriptions to March 1st, 1875 . .	206	18	6	Cash in hands of Treasurer	0	10	0
Seven Half-years' Bank Interest to Dec. 24, 1874	47	7	5	Cash in Bank . . .	644	12	4
	£650	11	10		£650	11	10

Audited and found correct,
T. HOPKIN,

THE NATIONAL VETERINARY BENEVOLENT SOCIETY.

The Treasurer's Financial Statement, 1875.

CASH RECEIVED.	£	s.	d.
Balance of Account, 8th Aug., 1871 . . .	328	18	6
Members' Subscriptions to March 1st, 1875 . .	37	8	0
Thomas Greaves, donation, being a sum presented to him from North of Scotland V.M.A. . .	5	0	0
Colonel Sir Frederick Wellington Fitzwygram, donation . .	21	0	0
Seven Half-years' Bank Interest to 24th December, 1874 . . .	34	16	2
	£427	2	8

CASH PAID.	£	s.	d.
April 17th, 1874, donation to the late Mrs. George Brown	5	0	0
Stamps, Circulars, Stationery, for 3½ years, ending March 1st, 1875 . .	2	14	6
Cash in Bank . . .	419	8	2
	£427	2	8
Amount owing at this date, 1st March, 1875 . .	£102	14	6

Audited and found correct,
T. HOPKIN.

It was then proposed by Mr. Whittle and seconded by Mr. Greaves that, in accordance with Rule XIII, the sum of £400 be transferred from the Defence Fund to the Benevolent Fund.—Carried.

It was proposed by Mr. Hopkin and seconded by Mr. Whittle, that in future the general meetings of the Society shall only be held once in five years, but that a report of the proceedings, with a statement of accounts, be published annually in the *Veterinarian*. —Carried.

Proposed by Mr. Woods and seconded by Mr. Hopkin, that the Secretary apply to members for the amount of their subscriptions in arrears.—Carried.

Resolved that the sum of £7 13s. 1d. be paid to Mr. T. T., being amount of expenses incurred in defending an action.

Resolved that the President be empowered to pay a sum not exceeding ten pounds per annum towards the support of the children of the late Mr. B., if after sufficient inquiry he considers it judicious to do so.

Resolved that one thousand pounds of the money be invested in such stock or bonds as the officers may approve.

After a vote of thanks to the President and officers for their past services, the following were appointed for ensuing term:

President, Peter Taylor, *Vice-President*, G. Heyes,
Treasurer, Thomas Greaves, *Hon. Secretary*, George Morgan.

Council:—William Field, junr., Professor Williams, Professor Walley, John Lawson, J. Cuthbert, William Broughton, William Whittle, J. Carter, William Woods, Jas. Storrar, Jas. Freeman, and F. Blakeway.

The President then read the following address, which was warmly applauded by the members present:

Gentlemen,—I am sorry that you have not been called together earlier according to our rules, but there are numerous causes why this has been so. At our last annual meeting, which was held in Birmingham, we issued our usual circulars, requesting the attendance of members, advertised our meeting, and publicly asked our professional brethren to attend. What was the result, gentlemen? how were we rewarded for our services for the preceding twelve months in carrying forward the good work of the Society, giving our time, our practical knowledge and our candid opinion upon all cases presented to us? Collecting funds and going forth into the wide world to show how advantageous and useful such a society is to the veterinary profession at large, thereby striving to obtain donations and increased subscriptions; for all these labours, and some of them I assure you, required great tact, thought, and discretion, Birmingham meeting rewarded us by almost empty benches; we in our silence thought we heard our professional brethren say, Though your labours may be great and toilsome, we have not time or disposition to come and thank you or even to review your stewardship. Gentlemen, this kind of treatment should not be given; if you wish and desire high and important offices to be filled by men of large experience, of great practical ability, of sterling integrity and honesty, then I say you must support them by answering to the call of duty, by being present above all things at the annual meetings. Excuses such as these: I have a serious case to see, or I am very much engaged, or I have a telegram to attend to, or I have my brother to see,—all such frivolous excuses as these should be set aside, and nothing but sickness should prevent your attendance. Our Society has become a very important and influential one, and I believe is the most wealthy belonging to the veterinary profession; it requires constant application and care in directing its ordinary duties. I must say that on all occasions when it was necessary to summon the attendance of our council, that attendance has always been promptly responded to with great punctuality, and their advice freely given upon all cases presented for their consideration, to the credit and honour of this Society. Your kind thanks are due to the council. Professional actions, legal processes, and benevolent works are constantly being brought before us, and these require the wisdom of your office-bearers, your council, and your members, to guard and direct a course of proceeding that shall result in an honorable and just termination. I have much to say to you, and hope you will be patient and kind while I trespass upon your valuable time in giving you

a faint idea of the work we have done. We have had a great number of cases brought before us—one case by a surgeon against a veterinary surgeon of high position in Liverpool for the value of a cow, for want of skill in the treatment. After an interview with your officers this case was settled. Another case was brought against the same party to recover a large sum of money for a horse which broke his back in the act of casting him. The plaintiff declined to proceed. Our council were called together to advise how to act upon a case of examination as to soundness brought against a Leeds veterinary surgeon. This horse was passed sound at Leeds. When he arrived in London he was taken ill and treated; after a time a certificate was given that he was unsound from chronic disease in the air passages. This case appeared a little complicated, but by the judicious handling of your council the plaintiff ceased further proceedings. Two more cases against a Manchester veterinary surgeon—one for examination as to soundness (excepting taking off the shoes), to ascertain for seedy toe and corns. When the dealer had him for some time he discovered that the horse had a seedy toe. He commenced an action against the veterinary surgeon for negligence; by the assistance and advice of your council this case ended. Second case, a client declined to pay an account for professional visits and medicine, in consequence of a supposed error of diagnosis; however, when the legal power of this Society was brought to bear he was glad to pay his account. A more recent case: an action was brought against a Chester veterinary surgeon for passing a mare as sound; in three weeks after she was found to be a roarer. This case appeared at one time to be troublesome; after a letter or two it was mutually settled. Another case was brought against a Rugby veterinary surgeon; he was not a member of our Society, but we willingly gave him our advice; however, the plaintiff did not proceed. Another member of our body, being the local Government Inspector of foreign cattle at the Port of Hull, was advised to sign a certain order for certain barges to carry out to sea a number of infected cattle to be there sunk. These barges not being paid for, the owner commenced proceedings against him for recovery of £400, the value of said barges. Your office-bearers were consulted in this case, and by the clearness of the opinion they formed of the case, and the sound advice tendered, our member felt himself strongly fortified and supported morally; he felt the full power and encouragement of sympathy, feeling a full reliance on the will and the power of his professional brethren to rally round him and help him in his hour of trial. This member has over and over again expressed his gratitude for the assistance, advice, and offer of support promised him, and just as the case was being taken into court, the Town Council, who ought

never to have allowed our member to be placed in such an unenviable position, came to his rescue at the last moment and paid the claim. We have had many more cases which by judicious advice and treatment have been settled. Recently we are sorry to say that purchasers of horses are endeavouring—we will not say because the novelty of the horse's good looks are vanishing from his mind, or that he has given too much money for him, or that he is not exactly what he wants, but from some flimsy pretence that the horse in his opinion was unsound at the time the veterinary surgeon examined him to take him to be examined by some other veterinary surgeon, and then bring an action against the veterinary surgeon who first examined him for the amount he paid for the horse, and saying he purchased the horse at a fancy price, which is often done, and the poor veterinary surgeon has no voice in this. We know of a few cases of this kind being brought against veterinary surgeons recently. It behoves us to look upon these cases with great gravity, for I do assure you that the examination of horses as to soundness is a very responsible and serious duty, and requires a large practical experience, scientific knowledge, and a cool and collected judgment; and if these actions continue to be brought, then it will be your duty to take into consideration whether the fee for examination of horses as to soundness should be increased in proportion to the very great responsibility incurred, or to take some action that shall better protect the honour of your members, and defend those unjust actions at law against an honest opinion given. How prostrating to an upright man, to be upbraided by an unkind client that you have passed an unsound horse, who seeks to recover the amount of money he paid for the horse, however large! I say, be careful, be honest in forming your opinions, but defend the right and just man.

I shall now proceed to the benevolent part of our Society. Amongst the many occupations which man indulges in, there is one which calls for our universal praise and admiration. That occupation is, doing good to your unfortunate professional brethren, their wives and children. I have one case to present for your kind consideration. A Mr. Brown, who was a good and very intelligent member, in the prime of life, succumbed to that dire disease, consumption, when life was unfolding to his view its glittering and golden treasures, which, alas, he was not allowed to gather. Since then his affectionate wife has joined him in the grave, and left behind two loving children to mourn their loss. Our Treasurer and I tendered to Mrs. Brown £5 when she lay on a bed of sickness, and it is now my pleasing duty to ask you to grant those two poor orphan children a sum of money, say every three months, to assist them in obtaining a good edu-

cation and position in society. All this must be done after a due investigation. Gentlemen, we give because we want to do good. We are perhaps too careless, or possibly a little too selfish in our profession, but we obey a Divine impulse when we seek to do good and noble works. Any one who has worked with a charitable object will be astonished at the desire of his professional brethren to do good when it is within their power; only let the object be placed prominently before them. Should any professional brother suffer, or any poor woman be rendered suddenly a widow, or any real and genuine case of distress be brought before the Society, whether in their public duties or in their professional pursuits, or their ordinary daily avocations, the members of council are ever ready to lend a helping hand of assistance. We have, I am happy to say, throughout our land, numerous societies formed to do good and charitable works; schools built; children taught; churches erected; drinking fountains made; benevolent societies established. All these matters come within the category of charities, that is, goodnesses; therefore, gentlemen, I ask you with all feelings of grace be more generous and less selfish to the unfortunate and poor of your brethren; interest yourselves in their wants and woes, as well as in their relief; cultivate general philanthropy and practical goodness in sentiment and conduct; *indulge benevolence* in all the little affairs of life, in every action and thought of your daily life. We are especially to include our sick,—as if any benevolent man ever left them out of consideration! What we must endeavour to do is, work well, to carry our Society onwards safely and profitably, in all things act with caution, and do justice to all.

A unanimous vote of thanks was then accorded to the president for his able address, and the meeting terminated.

Liverpool,
March, 1875.

GEO. MORGAN,
Hon. Sec.

MONTREAL VETERINARY COLLEGE.

COUNCIL OF AGRICULTURE FOR THE PROVINCE OF QUEBEC.

Present: Messrs. Benoit, Blackwood, Browning, Casavant, Gray, Levesque, Marsan, Massue, Sommerville, and Rev. S. Tasse.

The President having taken the chair, the minutes of the last

meeting were read and approved. The Secretary read a letter from D. McEachran, expressing regret that from the wording of the resolution passed at last meeting of Council relative to the new Veterinary College proposed to be erected by him, he does not feel justified in proceeding with, and assuming the heavy responsibility which the proposed buildings will necessitate without an explicit guarantee from the Council that the annual grant of $1000 from the Council and $800 from the Government will be paid under the conditions stated in his letter of the 15th January last.

In view of the great inconvenience now felt from want of proper accommodation in the various departments connected with the Veterinary College, the entire want of any suitable lecture room and museum, and considering the necessity that exists for providing the necessary buildings and appliances for the efficient teaching of the veterinary art to the continually increasing number of students;

The Committee would deeply regret should this favorable opportunity of securing a first-class Veterinary College for the Province be lost, and would strongly recommend that the Council do guarantee Mr. McEachran the payment annually of $1800 already approved by the Council, in order that the proposed new college may be proceeded with at once.

Mr. Levesque, seconded by Mr. Gray, moved—That the Council of Agriculture do guarantee to Mr. McEachran the sum of $1800 annually for a period of ten years as recommended by the report of the Executive Committee. (Carried.)—*Montreal Gazette.*

Veterinary Jurisprudence.

LANCASTER SPRING ASSIZES.

NISI PRIUS COURT, 11TH MARCH, 1875.

(*Before Mr. Justice Field and a Special Jury*).

CLAIM AGAINST THE LONDON AND NORTH WESTERN RAILWAY COMPANY FOR INJURY DONE TO A HORSE IN TRANSIT.

THIS was a claim for damages to a horse, the property of Mr. John Poole, of Ulverston, in transit on the defendants' railway.

Mr. Russell, Q.C., and *Mr. Crompton*, instructed by *Mr. S. Hart Jackson*, Ulverston, were for the plaintiff, and *Mr. Edwards*,

Q.C., and *Mr. Potter*, instructed by *Mr. Hocken*, London, for the defendants.

Mr. Russell said the plaintiff, Mr. John Poole, was a solicitor, residing at Ulverston, and he sued the railway company to recover such damages as the jury might fairly award in respect to injury sustained by a horse of his under circumstances he would shortly detail. On the 29th March, or about that time, a friend of the plaintiff bought the horse in question at a sale at Lucas's, in Liverpool, for about £70. The horse was sent from Lime-street Station, but the plaintiff alleged that in consequence of negligence the horse was injured while backing into the horse-box, and he (Mr. Russell) believed there seemed no doubt that the horse-box in which the horse was, was shunted in some violent way, and came in contact with some buffers. It was carried on to Ulverston, where it was found, on plaintiff examining it, that something was wrong with it; it did not seem to have the use of its limbs, and looked as if partially paralysed. It was then found that it had sustained a concussion of the spine, which, he might say, was like the human spine, but not so sensitive. In this case the company had protected themselves—rightly, no doubt—in a statute which limited their liability to £50 in case where an insurance was not paid for more. He was afraid the plaintiff could not recover more than £50, and whether they would award the whole of that would be for the jury to say when they had heard the evidence. They would have to say whether there was any negligence, and, if so, then the question of damage would have to be determined upon.

Mr. Bolton, examined by Mr. Crompton: I am manager of the Park House Mines, near Ulverston. About the end of March last year, I went with Mr. Poole to Lucas's, at Liverpool, to buy a horse, and ultimately a horse was knocked down to us for 58 guineas. The sale took place on Saturday, and after the sale it was taken back to its stable. I saw the horse on Monday again, and it seemed all right. I went home in the same train that the horse was carried in. I asked an official for a horse-box going north. He said "It's coming now." I said, "Yes, it's coming; and a nice speed it's coming at." It was coming at 10 or 12 miles an hour when a collision took place between it and the other carriages. I said to the official, "Is this the way you deal with people's property?" The official replied "They have no business to shunt in that way." When the horse-box came into collision it rebounded from three to four feet. I heard a noise in the horse-box as if the horse had been thrown down and was trying to get up. It was quite about half a minute. I declined, then, to take the horse without examining it. The official thereupon opened the door of the box, and I found that the horse was trembling with fear. There was some dirt on the horse's hocks, and the hair was turned just above his tail. I said "I can't see that he ails anything, but I'll take your name and address." He said his name was Crease.

Mr. Edwards, Q.C.: The man, unfortunately, is since dead, my lord.

William Bowman deposed: I saw the horse bought by Mr. Poole, and when I saw him he was all right. I took him from Lucas's, at Liverpool, to the Lime Street station. He was put in a horse-box.

John Poole, the plaintiff, examined by *Mr. Crompton*, said: I instructed Mr. Bolton to buy this horse for 58 guineas. I saw him exercised in the yard at Lucas's, and he went very freely and well; in fact, I never saw a horse leap so well. Next morning, when the horse arrived at Ulverston, I found that the skin was broken at the sides, and a little hair was rubbed off six inches from the root of the tail. I rode him eight miles three days afterwards. When I put the saddle on his back he flinched very much, and he went very badly. When I rode him he did not seem to gather his legs under him with ease. After that, I rode him twice to Barrow, which is ten miles from Ulverston. He came back much worse than he went. On the second occasion, when I was returning, he nearly fell with me, because he could scarcely get his near hind leg forward. The hind legs of the horse seemed to get locked. I examined him, and on running my thumb down his spine he winced a good deal, and appeared to suffer considerably when my thumb touched a certain place. The place broke out in a kind of pimply sore. I got a veterinary surgeon to examine him. At present the horse is a mere skeleton, and is not fit to ride.

Cross-examined by Mr. Edwards, Q.C.: This horse, before I bought it, was not examined by a professional man. It had come from Ireland a few days before. The injury to the spine was about six or seven inches above the root of the tail. I call it a displacement.

Roger Parkinson examined by Mr. Russell, Q.C.: I am practising as a veterinary surgeon in Ulverston. I examined the horse belonging to Mr. Poole, and came to the conclusion that he was injured in his back. I tried to back him, but I could not get him to back. I then brought him out of the stable, and he rocked to and fro in walking across the road. From my examination I concluded that the horse was injured in the spine—that there was, in fact, a fracture of the *sacrum* without displacement. The horse was otherwise in very good condition. If the injury had been of long standing its condition would have been very poor. He is at present very emaciated, in consequence of the injury to his back, and is practically worthless.

Cross-examined by Mr. Edwards, Q.C.: "Crouching" is a habit more easily cured than "crib-biting." The fracture was lower down than the lumbar vertebra. The fracture could be felt by the finger.

Dr. Taylor, of Ulverston, was also examined, in order to show that the horse was injured in the spine.

Thomas Mann, a servant of Mr. Lucas, of Liverpool, gave evidence to the effect that the horse, when sold to Mr. Poole, was perfectly sound.

Henry Ball said he had charge of the horse in question at Belfast. He belonged to Mr. Costello. He was a perfectly sound horse at the time, except that he was addicted to "crib-biting."

Gilbert Hayes, M.R.C.V.S., Liverpool, gave evidence to the effect that he examined the horse at Mr. Poole's, and found it suffering from a fracture of the spine, which he considered would have been caused by the animal falling on its haunches in the horse-box.

George Morgan, M.R.C.V.S., a veterinary surgeon practising in Liverpool, gave similiar evidence, amplified by scientific reasons for coming to such a conclusion. Did not think there was an actual fracture of the spine, but merely a severe wrench or sprain of the ligaments of the lumbar region, rendering the animal what is termed in horse-dealers' phrase a "bobby," plainly indicated by the plaiting of the legs in trotting and the pedulous motion of the tail. Knew he was a "crib-biter," but never knew "crib-biting" to prevent a horse from lying down—at present the animal was worth nothing.

Mr. Edwards then addressed the jury for the defendants. He pointed out that the plaintiff, when he bought the horse at the repository of Messrs. Lucas and Co., of Liverpool, did not have it examined by any competent person—that is, by any veterinary surgeon—but examined it himself simply, assisted by two of his friends. The horse had come over from Ireland by steamer one or two days previously, and was sent off at once to the auction yard of Messrs. Lucas and Co. The man who had brought it over said that he had only known the horse for four months—a very short time indeed for any person to keep a horse if it was worth anything. And nothing else was to be expected but that this man would give his horse the best character he could. He argued from the facts as stated by the witnesses that there was not sufficient ground for coming to the conclusion that the horse was in a sound state when it was bought by the plaintiff, and that therefore the jury could not say that the defendants had caused the injury which it was said the horse had sustained.

Thomas Ravenscar said he saw the horse put into the horse-box, and saw the latter shunted down to the train; it was not running at a speed of twelve miles an hour.

William Bromley, M.R.C.V.S., veterinary surgeon, Lancaster, said he was sent for to examine Mr. Poole's horse, and Mr. Parkinson was sent for also. He had the horse walked out, then backed, and afterwards turned round. He had this done to see if he had the spinal disease, or if he overlapped his hind legs. He found nothing at all the matter with the horse. There was no sign of spinal injury whatever. He thought if it had been injured in the way described it could not have carried any weight.

Cross-examined: Except a habit of crib-biting, the horse was sound in wind and limb when witness saw him in April last year. What is called "plaiting" of the hind legs is a symptom of spinal paralysis.

Professor Williams, Principal of the New Veterinary College at Edinburgh, said he examined the horse of Mr. Poole, specially. The most noticeable feature about him was that he was very thin-backed—what was called "razor-backed." The hocks were turned in, and the toes out. If he had been suffering from spinal injury or

paralysis, his hocks would be turned outwards. He observed that the muscles of the throat were well developed, which was a symptom of a long-continued habit of "crib-biting."

Mr. Jos. Greaves, M.R.C.V.S., a veterinary surgeon, deposed that he made an examination of the horse, and found nothing wrong with his spine. He had no paralysis, but was much emaciated. He attributed his appearance to the effect of extreme exposure on the hills, and also to crib-biting.

Mr. Bell, M.R.C.V.S., Carlisle, another veterinary surgeon, gave similiar evidence.

Mr. Edwards again addressed the jury on all the evidence and merits of the case, and submitted that there was no liability on the part of the railway company for any injuries which the horse had received.

Mr. Russell followed on behalf of the plaintiff, and remarked on the circumstance that the plaintiff, Mr. Poole, had behaved with great fairness and openness in this case, and had exhibited every desire—for he had written to the company suggesting that the horse should be examined by a veterinary surgeon approved by both parties, and that this gentleman should act as arbitrator in the matter of the value of the horse—to avoid litigation. Witnesses of great professional reputation had been called on the part of the defendants, and they contradicted flatly the evidence submitted on behalf of the plaintiff. That circumstance amounted to nothing in the consideration of the case. It served simply as an illustration of the saying that doctors differed—not merely those doctors dealing with the nobler animal man, but those whose operations were peculiarly confined to horse-flesh. The circumstance of the collision had been remarked upon and underrated by the learned counsel for the defence; but it was a matter of no moment as to the force of the collision, because it appeared on the evidence that even the company's servant who witnessed it said that shunting ought not to be conducted in such a manner; so that the collision was undoubtedly a violent one. When the box was opened after the collision the horse was trembling violently all over, and the skin was rubbed off certain parts of the animal's body. And it must be borne in mind that, according to evidence which had not been controverted, the horse was perfectly sound when it came from Ireland, and when it was bought by the plaintiff at Lucas's, and also that it was a horse which had even won some celebrity as a racer on one of the minor race-courses in Ireland. It had been shown in evidence on the part of the plaintiff that this horse did not lie down, because of the acute pain which it suffered and the difficulty it had in trying to rise from a recumbent position. At least that was what was said by the witnesses for the plaintiff. On the other hand the jury were told by the witnesses for the defendants—particularly by Mr. Bromley—that some horses, otherwise sound, never did lie down. In fact Mr. Bromley said he knew three such horses in Lancaster. Well, if such was the fact it was remarkable. And he (Mr. Russell) felt himself at liberty to say that no horse, without there was something abnormal in its condition, would

refrain from assuming regularly the natural position of rest. A horse required rest quite as much as a man, and the theory set up by Mr. Bromley appeared altogether absurd. He submitted that upon the evidence the jury would have no difficulty in coming to a verdict in favour of the plaintiff.

His Lordship then summed up the evidence with great care, and the jury very shortly found a verdict for the plaintiff—damages £50.

MELTON MOWBRAY.

Petty Sessions, March 23rd.

(Before W. A. Pochin, G. Pochin, N. Whitchurch, and H. C. Woodcock, Esqrs., and Major Clagget.)

CHARGE OF DEPOSITING POISONED MEAT IN PLACES ACCESSIBLE TO ANIMALS.

James Large was charged with on Jan. 30, at Little Dalby and Burton Lazars, placing pieces of meat impregnated with poison, in the Ash Spinney and Long Spinney. *Mr. Haxby* appeared for the prosecution and *Mr. Atter* for the defence.

Mr. Haxby said he appeared for the prosecutor, John West, huntsman to the Earl of Lonsdale, and he should be able to show by evidence that for some time past defendant had been rather neglectful of his duties in trapping and looking for vermin, and had resorted to the easier way of doing his work by using strychnine. He should be able to show that a piece of rabbit had been analysed, and contained strychnine, and that three foxhounds had died, and that one on being analysed was found to contain some of the same poison. He should be exceedingly loth to say that defendant laid this strychnine for any other purpose than saving his own labour, and should be sorry for it to be supposed that he intended to produce the unfortunate results which he did produce. Of course Lord Lonsdale, having lost valuable hounds, felt aggrieved at poison being negligently laid about; and he was quite sure the owner of the land, Mr. Hartopp, would be only too glad to have the matter explained and sifted. It was a criminal act to lay poison, and persons using it in a careless and illegal manner must do so at their own risk, and must be checked in doing so, and the public life and property must not be exposed to injury by their carelessness. The facts of the case were simple. The poison was laid about and eaten, no doubt, by the hounds which died. Inquiry was made, and suspicion fell on the defendant, and the matter was now brought forward that it might be cleared up.

John West, huntsman to the Earl of Lonsdale, said, on Jan. 30th the hounds met at Leesthorpe. They came up to Saxby, and thence towards Burton Lazars. When they left Saxby they were all healthy and well. When they got to Burton they went into the Long Spinney, near the river. When they came out at the end of the Spinney one of them, Guardsman, picked up some rabbit, but he made him

drop it. They went up the road, and then went back and drew the cover again, but did not find a fox, and brought the hounds out, and when on the road three of them died. They stretched themselves out back, stiffened, and died. One hound which he did not think interfered with it had died since. He sent the body of one hound to Mr. Tuson. Guardsman was all right. The hounds died in about ten minutes, or it might be twenty, not far from Brickhill Spinney. One hound staggered before they got to the Long Spinney, from weakness and hard working, and was left behind. It was now well.

John Laxton said he was under keeper to Mr. Hartopp, and defendant was the head keeper. Defendant had kept his vermin down lately by different modes. He had sometimes shot some, such as crows, magpies, and hawks. Sometimes they had used traps for killing stoats and weasles, and that sort of thing. They had used some poison for killing winged vermin. They had not, to his knowledge, used poison for killing ground vermin. About the beginning of January defendant gave him a bottle, which he supposed contained strychnine, for the purpose of dressing a bait to nail up a tree. He did dress the bait, and nailed it up a tree, carrying out defendant's directions. It would be ten feet from the ground. He put the bottle in his pocket again, and kept it for some time. It was empty. Defendant came to him for it, when he was digging in the Ash Spinney, he believed two days before the hounds were poisoned. Defendant had a bag on his shoulder, in which were a rabbit, a hammer, and nails. He said he wanted to nail a bait or two up. He did not put anything into the bottle in his presence. Had not seen the bottle since. Saw two baits up during the next week in the same spinney. They were about as high as his shoulder. The day after the hounds were poisoned defendant said it was a bad job, and that he was afraid somebody had been throwing bits of meat about, and they had got something in that way. He and Buswell were digging in the Long Spinney a few days after, and several bits of rabbit were lying about. Several rabbits had died. He picked up a dead magpie about the same place, and defendant said he supposed it had been tasting of the bait in a deal tree. A short time before the hounds were poisoned defendant told him he had put a bait in the bone house, and if he wanted it he could have it; and he told him he did not want it. It was part of a rabbit, the fore quarters, head and shoulders. He gave that to Mr. Campbell. He had the bottle twice in his possession; first before the frost, and he dressed the bait with it. (*Cross-examined*): He had always put the baits he had to do with out of the reach of hounds. He had not seen baits elsewhere. The Ash Spinney was up at Dalby, and the Long Spinney below defendant's house.

W. H. Campbell said he had received a bait from the last witness, showed it to Lord Lonsdale, and ultimately sent it to London, to Mr. Tuson.

Richd. Vine Tuson, Professor of Chemistry at the Royal Veterinary College, said, on February 5th he received a box from West, the huntsman, containing a hound. He analysed the contents of the stomach, and found sufficient strychnine to account for the death

of the animal. On February 8th he received another box, containing the head and fore part of a rabbit, and on examining that found strychnine in considerable quantity.—This closed the case for the prosecution.

Mr. Atter remarked that a great deal more had been made of the case than was necessary. If there had been any damage to hounds that might be matter of inquiry in a different court. The charge was simply that of placing a quantity of poisoned meat upon land in certain parishes. The question before the Court had nothing whatever to do with Lord Lonsdale or his hounds, but was whether it had been proved by the prosecution that the defendant had put any poisoned meat on the land at all. If he did he was within the Act of Parliament. He was sorry that the attorney for the prosecution had made charges of negligence and frequenting public-houses against the defendant which he had not called a single witness to support, the defendant having been ten years in the employ of Mr. Hartopp, which was the best proof of the goodness of his character and conduct. He contended that the wording of the Act under which the prosecution was brought referred to any person who should knowingly and wilfully set, lay up, or place, or cause to be set, laid up, or placed, any flesh or meat steeped or impregnated with any poison, on land; and that there was no proof that defendant had done this. All that was proved was that baits had been nailed up trees, and that, he contended, was not within the meaning of the Act.

Mr. Haxby hoped the Court would not be led away by his friend's ingenious defence, that bait put up a tree was not upon land. He believed it was upon land, and within the Act.

The Magistrates retired to consult, and on their return the *Chairman* said they were, after a great deal of deliberation, unanimously of opinion that the Act of Parliament was infringed. The defendant was fined £2 and costs 15s., or two months' hard labour.—*Leicester Journal.*

THE SCOTCH CATTLE-DISEASE PROSECUTION.

Jones *v.* Kennedy.

At the conclusion of the important cattle-disease prosecution which was published in extenso in our last number it was stated that—

"An appeal against the decision has since been intimated to the Quarter Sessions, to be held on April 6th, on behalf of Mr. Jones, J.P., Fiscal, when the whole of the above evidence will probably be re-led. The ground of appeal is 'that the judgment of the Justices is contrary to the evidence adduced.'"

In accordance with this notice, the appeal was heard at the Quarter Sessions which assembled on April 6th, and the whole of the evidence was reproduced.

The Court affirmed the previous decision in favour of Kennedy, and allowed him thirty pounds as costs.

NEW MEMBERS OF THE PROFESSION.

At the several meetings of the Court of Examiners of the Royal College of Veterinary Surgeons held during the week commencing March 29th the following students from the Royal Veterinary College, London, received the diploma of the College and were admitted members of the profession:

March 29th.

Mr. Murray Anderson	London.
— John Tarver Burden	Beaulieu, Southampton.
— Richard Cuthbert Thompson	Durham.
— Henry Arthur Muffitt	London.
— Frederick Adsetts	White House, Derby.
— John Henry Steel	Manchester.

March 30th.

Mr. George William Carter	Bradford.
— George Farrow	Durham.
— William Robert Hagger	Ashdon, Essex.
— Henry Baker	Longton, Stafford.
— John Holmer Harrison Peard	Rathcamac, Co. Cork.
— Charles James Reynolds	Mansfield, Notts.
— William Garton Dixon	St. Helens, Lancashire.

March 31st.

Mr. Frank Taylor Oatway	Bideford, North Devon.
— George Burton	Paignton, South Devon.
— George Bailey	Old Park, Shifnal, Salop.
— Thomas Robert Williams	Abergele, Denbighshire.
— Thomas Leather	Liverpool.
— William Edwin Taylor	Bury St. Edmunds.
— William Asbey Hurrell	Southminster, Essex.
— James Frederick Oliver	Derby.
— Richard John Verney	Blockley, Worcestershire.

April 1st.

Mr. John Blakeway, Wolstenholme	Manchester.
— Walter Seymour Bontoft	Wrangle, Boston, Lincolnshire.
— John Stenson Barber	Eastwood, Notts.
— Henry Durant Gibbings	North Tawton, Devon.
— William Vessey	Christchurch, Hants.
— Walter Longhurst	Farnham, Surrey.

Students of the Royal Veterinary College who passed their "First Examination" at a Meeting of the Court of Examiners held April 2nd and 3rd:

April 2nd.

Mr. Fred Smith.
— John Silvester Cusack.
Mr. William Dale.
— James Mosedale.
Mr. James Arundel Hanne.

April 3rd.

Mr. Samuel James Cooper.
— Augustus John Sherrott.
Mr. Charles Comber Hoadley.
— Arthur Henry Jacobs.
Mr. William Rose.

At the Meetings of the Court of Examiners of the Royal College of Veterinary Surgeons held in Edinburgh on April 15th and 16th, the following students from the Veterinary Colleges of Edinburgh passed their Examination and received the diploma of the College.

NEW VETERINARY COLLEGE.

April 15th.

Mr. John Nettleton	Hunmanby, Yorkshire.
— Robert Moore	West Brunton, Newcastle.
— Samuel Lawton Ragg	Sheffield.
— Thomas Flintoff	Deighton, Yorkshire.
— John Wagstaff Marsland	Stalybridge.
— Richard Roberts	Kendal, Westmoreland.
— William Barnes	Tarporley, Cheshire.
— William Moodie	Rothesay, Buteshire.
— John Johnston	Roslin, Edinburgh.

VETERINARY COLLEGE, EDINBURGH.

April 16th.

Mr. John Jones	Mallow, Co. Cork.
— William Earle McCracken	Whithom, Wigtonshire.
— James Geddes Tait	Elgin, Morayshire.
— William Walter McGwire	Dungarvan, Co. Waterford.
— Israel Print	Little Wolford, Shipston-on-Stour.
— Edward Thomas	Carno, Montgomeryshire.

At a Meeting of the Court of Examiners of the Royal College of Veterinary Surgeons held in Glasgow, April 17th, the follow-

ing students from the Glasgow Veterinary College passed their Examination and received the diploma of the College.

April 17th.

Mr. John H. Bryce	Port Street, Stirling.
— Thomas Giffen	Belfast.
— William Semple	Church Street, Dumbarton.
— John Sinclair	Blythswood Terrace, Glasgow.
— John Boyd Moore	Eglinton Street, Glasgow.
— George Ferguson	Newton Stewart, Wigtonshire.
— Robertson Muir	Baron Park, Bute.
— Charles Diggle Ashworth	Heywood, Manchester.
— Alexander Reddie Simpson	Abercromby Place, Stirling.
— John Jarvie	Wishaw, Lanark.

The following Students of the Glasgow Veterinary College passed their "First Examination" at a Meeting of the Court of Examiners held April 17th:

Mr. Andrew Clark. Mr. Robert Mc W. Banks.

OBITUARY.

We have to record the following death:

At his residence, The Oldhams, Sharples, near Bolton, Lancashire, on the 15th inst., Alexander Lawson, M.R.C.V.S., in the sixty-fourth year of his age. His diploma bears date April 20, 1842.

"Mr. Lawson was one of the prime movers in Scotland for the obtainment of the Charter of Incorporation of the Royal College of Veterinary Surgeons in 1844. He was brother to the late John Lawson, M.R.C.V.S., of Manchester, and was much esteemed by those of the profession to whom he was known in Scotland and England. Possessed of great abilities, and a warmly attached friend, his death leaves a void in more than one friendship."

To this we have to add the death of John Alexander McKenna, M.R.C.V.S., Belfast, after a short illness, in the thirty-sixth year of his age. His diploma bears date April 27th, 1863.

Intelligence reached us on the eve of the publication of the Journal of the death of Mr. W. Burley, M.R.C.V.S., Leicester. Mr. Burley was a distinguished member of the profession, and had held office as President, Vice-President, and Member of the Council of the Royal College of Veterinary Surgeons. For some years he had ceased to take any active part in the ordinary duties of his profession, and had enjoyed the fruits of his well-earned reputation. His diploma dates as far back as July 12th, 1815.

THE

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Communications and Cases.

TYPHOID FEVER IN PIGS.

By J. Wortley Axe, Assistant-Professor in the Royal Veterinary College.

In the February number of the *Veterinarian*, Mr. T. D. Broad called attention to the circumstance that "for some time past typhoid fever in pigs had been prevalent in the neighbourhood of Bath," and several illustrative cases of this disease were briefly recorded by him. In fact, one of the outbreaks referred to by Mr. Broad was recently made the ground of an action at law, particulars of which will be found in another part of this Journal. Certain morbid parts of the pigs in question as well as those of others were sent to the College for our inspection, and an opinion was sought as to the nature of the pathological changes exhibited by them. After a careful examination we had no hesitation in pronouncing the changes to be the specific and unmistakable lesions of typhoid fever, and as a consequence of this opinion I was subpœnaed to give evidence in the action alluded to.

At the conclusion of the trial, which extended over four days, I resolved to avail myself of the opportunity which then offered of making a full investigation into the circumstances relating to the outbreak of this disease in all its bearings. Mr. Broad, with the zeal and enthusiasm of a true scientist, placed at my disposal every means that would facilitate inquiry, and to his valuable aid I am indebted for much

of the matter which I am now able to record. Before considering the more vital questions of propagation and dissemination of typhoid fever in pigs, I propose to deal with the facts which I have been able to gather from the most trustworthy sources in connection with the Bath outbreak. These I am sure will furnish valuable data in elucidating the general causes of the development and spread of this destructive fever. It may here be remarked that one result of my inquiry has been to satisfy me that typhoid disease in pigs, although not a common affection, is by no means rare in the counties of Wilts and Somerset. Whether this is to be accounted for by the large importation of pigs from Ireland into the port of Bristol, and the extensive trade in them thus developed in these counties, is matter for future investigation. In reference to the outbreak in question Mr. Broad was first consulted on the 16th of December of last year. The disease first appeared in a herd of pigs the property of Mr. Nicholas, bacon factor, of Corston, a village situated about three miles to the north-west of Bath. The herd consisted of 120 pigs of various ages, of both sexes, and in every variety of condition, from the small store to the bacon hog. Unfortunately the history of this entire herd is not known to us. The last addition to it was made on the 27th of November, when forty-six young pigs were purchased by Mr. Nicholas of Mr. Sergeant of Bath. Of this number eight were obtained from Mr. Daubeney of Throckerwick Lodge, on the 7th of November, eleven from Mr. Nee, of Faulkland, and thirty from Mr. Dicks of Shepton Mallet on the 14th and 21st of November, respectively. Three of the eleven purchased of Mr. Nee were sold to Mr. Slip of Lark Hall, and continued in perfect health. From the 21st of November up to the 27th, the whole of the forty-six animals were in the possession of Mr. Sergeant. On the date last named they were sold to Mr. Nicholas, and on the 2nd of December, five days afterwards, seven of them died. The spread of the disease and mortality continued from day to day, until thirty-two had succumbed. Others subsequently became more or less affected, and the entire herd of 120 pigs were ultimately slaughtered.

On the 16th of December Mr. Broad instituted a careful examination of that portion of the herd then living and also of others which had recently died. From the symptoms presented by the former and the lesions exhibited by the latter, Mr. Broad was convinced that the disease was no other than typhoid fever, and this opinion was expressed at once to Mr. Barrell, Veterinary Surgeon, Reynsham, who

met Mr. Broad in consultation. While the disease was raging with its wonted virulence on the premises of Mr. Nicholas, six pigs in an adjoining orchard owned by Mr. Gregory became infected, drooped, and died in a few days. It is important to observe in connection with the latter circumstance that the manure from the pig-styes of Mr. Nicholas, saturated with the intestinal discharges of the sick animals, was regularly thrown into the adjoining orchard. In this way Mr. Gregory's pigs were being supplied with the fever-poison in its most concentrated and destructive form. That they partook of it is suggested by a consideration of their natural habits, and clearly demonstrated by the final result. I have referred thus fully to the Corston outbreak, not on account of the practical deductions which it immediately furnishes, but with the object of placing the facts on record pending further investigation. To some persons less familiar with the difficulties which attach to investigations of contagious diseases this may seem superfluous, but I regard it to be one of the first principles of medical science to record every fact developed in an inquiry of this kind, however unconnected it may at first appear. The elucidation of the cause of disease has in numerous instances in my own experience turned upon what appeared to be at first sight of slight importance.

The next outbreak to which I shall refer occurred in a herd of pigs the property of Mr. James Gore, provision merchant, Bradford-on-Avon, about seven miles to the south-east of Bath. This herd consisted of thirty-four pigs of all ages; most of them, however, were about nine months old; they were of both sexes and in good store condition. Of this number eight were purchased in Devizes market on the 30th of October, with two others. The latter were immediately re-sold by Mr. Gore, and went directly out of his hands. These two pigs, although out of the same lot as the eight referred to, continued in perfect health. The remaining twenty-four of this herd were obtained from a gentleman residing at Bilcomb Farm, distant about one mile from Bradford; they were all bred by the vendor, and at the time of sale were in good health. In this condition they continued up to the 17th of January, the date of the first appearance of the malady. On the 10th of January one of four pigs belonging to a gentleman residing about a mile from Bradford was observed to droop, and gave general indications of illness. This animal was purchased by Mr. Gore and removed to his business premises, and there it was killed and dressed in the usual manner for trade purposes. In pursuing this investigation it also came to my knowledge

that about seven days after this event a second pig of the same herd sickened and subsequently died, exhibiting all the specific symptoms of typhoid fever. The two, then remaining, were purchased by Mr. Gore; of these one was immediately sold to a neighbouring butcher, and before it was destroyed the characteristic signs of typhoid fever were fully developed. The other was slaughtered by Mr. Gore himself, who says that "although he did not notice any decided symptoms of illness he had no doubt about its being infected." Mr. Gore's candour and great willingness to give me all the information he possessed on the subject deserves my best thanks. His information is all the more valuable, not only on account of a long experience in the management of pigs, but also from the fact of his being a close observer of their habits; and having at the same time a knowledge of their viscera in a state of health, he was able to point out to me and describe, with commendable clearness, the pathological changes which he had observed. That the four pigs above referred to were the subjects of typhoid fever is to my mind beyond a doubt. The symptoms and post-mortem lesions as described to me by Mr. Gore are sufficient in themselves to make this a matter of certainty. The subsequent infection of that gentleman's herd under the circumstances to be described was a result as clear and conclusive as any in experimental science. The intestines of the pig first purchased by Mr. Gore were steeped in water in the ordinary way, and subsequently they were dressed and boiled to be retailed as food (chitterlings). The water in which they were steeped, as well as that in which they were boiled, was thrown into the wash tub and served out with other food to Mr. Gore's pigs. On the 17th of January, seven days from the date of this event, several of these animals sickened, became dull, refused their food, and were suddenly prostrated. Day by day the disorder increased in extent and severity until the entire herd was swept away. It should not be overlooked in reference to this, as also to all the other outbreaks here referred to, that as the disease became more rife, not only was its malignity increased, but the duration of the affection was likewise materially shortened. The importance of these facts cannot be over-estimated, and should be borne in mind when considering the history and pathological processes which characterise this destructive fever. The death of the first animal occurred on the 20th of January, three days after the first decided symptoms were observed. With each succeeding day the mortality increased until no less than ten deaths were recorded in one day.

On the 1st of February Mr. Broad was consulted, and after making post-mortem examinations of several pigs, and carefully examining those which were still living, he recognised at once the specific characteristics of typhoid fever. On the destruction of the whole herd the styes and yard are said to have been well cleaned and disinfected ; but that the process was not carried out with that care and completeness which the nature of the circumstances demanded is clearly proved by the train of events which followed. On the 26th of February Mr. Gore purchased a sow, and took the precaution to place her in a yard about half a mile distant from the infected styes. Here she remained until the 12th of March, apparently in the best of health. On that day she was removed into one of the styes previously occupied by the fever-stricken animals, and on the 13th two other pregnant sows were purchased, and they too were placed in an infected compartment. Four days after this change of place the sow first alluded to sickened ; the specific symptoms of typhoid fever soon appeared, and she died on the 9th of April in a condition of extreme emaciation. I had an opportunity of examining this animal post-mortem ; the lesions exhibited were such as to leave no doubt as to the nature of the affection from which she had suffered. In reference to these lesions I shall have something to say when considering the morbid changes peculiar to this form of fever. Of the two sows which were purchased on the 13th of March one sickened on the 21st, she aborted on the 30th, and died on the 1st of April, after exhibiting all the phenomena characteristic of enteric disease. When the first decided symptoms of illness were observed in this animal she was at once removed from her fellow and placed with the one first affected. At the time of my visit to Bradford the third sow was still free from disease. Of the sanitary condition of the styes it is impossible to conceive anything more complete. Placed in an open yard by the side of the Avon, on a hill high above the town and distant about a mile from it, they were, so far as concerns the nature of their situation and likewise their internal arrangement, everything that the most fastidious could desire. The facts here recorded in connection with this outbreak illustrate in a remarkable manner the mode of propagation of this destructive fever. That it is essentially contagious is here established beyond reasonable doubt, and the real significance of the succession of events above referred to will be readily comprehended even by the unprofessional. The fact of the importation of the disease into Mr. Gore's herd by the Woolley-Grange pigs is established by the strongest possible

evidence, and the subsequent infection of two of the three sows alluded to above is a forcible example of its contagious nature and the mode by which it is disseminated.

The reason of the security of the third sow is difficult of explanation, but the fact nevertheless remains that so soon as her fellow was observed to give evidence of illness, and before the diarrhœal discharges had set in, she was removed to another and a distant stye.

The next important outbreak to which I will call attention, and one so replete with interest that I shall be pardoned for relating it at length, occurred on the farm of Mr. James Keeval, of Melksham, about ten or twelve miles from Bath. As in the case previously recorded, the circumstances relating to this outbreak were investigated by me on the spot, so that I had the important advantage of personally examining the styes and premises, not only in regard to their sanitary condition, but also to their actual and relative position. I had besides an opportunity of informing myself as to the mode of feeding, and the general system of management to which these pigs were subjected. Nothing has appeared to me so striking and important in the history of these several outbreaks as the mode of feeding in connection with the propagation of typhoid fever. On this point I shall have to remark when speaking in particular of its contagious property and dissemination. On the 20th of February Mr. Keeval purchased ten pigs in Malmesbury market, and these I am informed were previously obtained from Cirencester. Four days afterwards (February 24th) some of them were observed to droop, and they soon exhibited decided symptoms of enteric fever. One of them died on the sixth day after the first indications of illness, and the remainder were at once slaughtered. Of the one which fell a victim to the malady a port-mortem examination was made, and from a description of the lesions detailed to me by Mr. Keeval I can safely affirm that they were none other than the specific effects of typhoid fever. In Mr. Keeval's own words, "the large guts were thickened and covered with ulcers and yellow matter," and the entire mucous surface of the intestine was more or less congested. Besides there were also noticed during life the characteristic phenomena of the cutaneous rash in full development. After disposing of this lot of pigs the styes are said to have been thoroughly cleansed; but it will appear that this process, as in Mr. Gore's case was of too general a character to meet the special circumstances of the case. The subtle and virulent contagium, as is clearly demonstrated in both these outbreaks, is not to be annihilated by the ordinary methods of sanitary

police. Nothing short of a searching and liberal application of some powerful disinfectant is competent to effect this much-desired end, and to confer security upon the fever-tainted place. In this disorder, as in smallpox and the entire group of diseases to which they belong, the fever-poison itself must be directly attacked. To this part of the subject I propose to refer again. To continue the narrative. On the 1st of March Mr. Keeval purchased a lot of twenty pigs from Mr. Nee, a dealer. These animals had been in the possession of the latter-named person fourteen days, and during that time they continued in every respect healthy. On their arrival at Mr. Keeval's farm they were at once placed in the styes previously occupied by diseased animals. Six days after this event the same drooping symptoms appeared, followed by the cutaneous eruption; the disease ending with intestinal ulcers.

Four of this lot of pigs were now slaughtered, and the remaining sixteen were disposed of to Mr. Somers, of Melksham, on the 19th of March. At that time it is said they exhibited no decided symptoms of the disorder. On the following day the sixteen pigs were taken to Trowbridge market and sold to Mr. Weakes. One of them died on the 21st., and in a few days the entire herd succumbed to the effects of the malady. The natural order of these events is typical of the whole history of typhoid fever. They suggest to the practical mind at once the group to which this disease belongs, as well as the actual disease itself. If more evidence were required to establish the contagious nature of this disorder it will be found in the later history of this outbreak. At the time Mr. Somers purchased the sixteen pigs of Mr. Keeval (March 19) he also sold forty others to him; of these latter, ten were sent directly to a distant farm, and are at the present time perfectly healthy. The remaining thirty were placed in styes adjoining those out of which the tainted pigs were removed, and on the 26th of March, seven days after their arrival, the specific symptoms of enteric fever appeared, and at the suggestion of Mr. Broad the entire herd were slaughtered. Post-mortem examinations of some of these animals were made by Mr. Broad, and although considerable difference existed as regards the extent of the pathological changes in the several cases, depending no doubt on the different stages of the disorder, the nature of the lesions in all were esentially those of typhoid fever.

Regarding the condition of the intestines of those pigs in which the outward signs of disease had not yet appeared, Mr. Keeval says, " the inside of the guts throughout was like red

sealing-wax," and he supplements this remark with the very valuable observation that while being dressed the skin was noticed to be marked by a number of small white elevated spots, not unlike the eruption of nettle-rash. Some of them he says were isolated and others confluent. In considering the cutaneous eruption in relation to the symptomatology of typhoid fever it must not be lost sight of that the *white* elevated spots described by Mr. Keeval were seen in pigs that had been bled. As Mr. Somers had purchased the sixteen pigs remaining out of Mr. Keeval's infected herd I naturally extended my inquiry to the subseqnent dealings of the former, and I soon became acquainted with the fact that a short time after the fever-stricken herd had been disposed of by Mr. Somers, a sow was purchased by him and placed in the tainted stye. Not more than four days elapsed before this animal sickened and gave other more decided evidence of infection; she was destroyed exhibiting all the characteristic signs of typhoid fever. To complete the history of this deadly outbreak another story remains to be told. George Oatley, the manager to Mr. Keeval, purchased on the 8th of March a sow and seven young pigs in Devizes market, which at that time appeared to be in the best of health, and continued so up to the 3rd of April. They now began to droop, and evinced intense thirst; gradually the more striking symptoms of typhoid fever developed themselves. The sow with three of the young ones died about four days after the initial signs of illness; the remaining four were destroyed. George Oatley resides about a mile from Mr. Keeval's farm, where the outbreak first appeared; his pigs were far removed from all others in the parish, and no one save himself and wife had placed a foot in the stye since the arrival of the pigs on the 8th of March. How, then, it will be asked, did these pigs become the recipients of the fever-poison? On the 26th of March, George Oatley assisted in making post-mortem examinations and in dressing the pigs which were slaughtered. The same evening he took home some intestines to prepare for his own use. As they were being dressed it was noticed by his wife that they presented an unhealthy appearance, and she consequently decided not to use them. I was very particular in my inquiry as to what had become of these parts, and expected to find that they had been given to the pigs, but I was assured on the contrary that they were buried entirely beyond their reach. The probable means by which the contagious element was conveyed to this herd were disposed of one by one, and, as the inquiry narrowed, the man himself seemed to stand alone

the unconscious bearer of the fever-poison. The result of further inquiry rendered this idea conclusive, and developed a valuable experimental fact. It appears that after assisting in the post-mortem examinations last referred to, Oatley returned home, and with unwashed hands mixed the food for his own sow and her seven young ones. Looking, therefore, at the distance which separates Oatley's premises from those of Mr. Keeval's, in conjunction with the facts that no communication between the two places had existed save through the man himself, and that no disease prevailed in any other part of the parish, as well as the equally important statement that, excepting Oatley and his wife, no one had placed a foot in the stye, the inference that the man himself was the bearer of the contagium is irresistible. As to the particular part of his person which gave lodgment to the infectious matter, while it may be suggested that his boots or other articles of attire may have been the actual agents engaged, it is far more rational to infer that the tainted hands which mixed the evening meal were principally concerned in lighting up this new centre of disease.

(*To be continued.*)

H89

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 324.)

The Rosaceæ. *Roseworts*:—As established by Prof. Lindley is now made to include the roses, blackberries, strawberries, cinquefoils, and allied plants, but not the *Drupaceæ* or stone fruit, or almond-worts, or the *Pomaceæ*, or appleworts, which latter by many authors are made the centre groups of Rosaceæ.

Here, then, we shall review the following genera:—

1. *Rosa*, briars, roses.
2. *Rubus*, brambles, blackberries, raspberries.
3. *Fragaria*, strawberries.
4. *Potentilla*, cinquefoil.

1. The briars, or wild roses, are well known on account of a large list of native species, amongst which the common dog-rose and the sweet-briar will be familiar to all.

All the forms of wild roses, both native and foreign, have a tendency to run into varieties, and hence species are few or many according to the botanist's notion of the value of the observed differences. But this faculty is of even greater

importance than as affording facilities for species splitting, as it aids the cultivator in bringing about the enormous list of cultivated or garden forms; these, already amounting to some hundreds, are yearly on the increase, and it would appear that every variety which is arrived at only gives a starting-point for the production of newer forms. Both the field and garden roses have ever been favourites with the poets, as the perfume in the leaves of the sweet-briars or "Eglantine," while the petals of both wild and cultivated roses are remarkable for a great variety of perfume.

The fact, too, that the floral organs so readily take on a kind of duplication, and that in doing so the perfume is augmented rather than otherwise, renders full-blown *double* roses of remarkable texture. So that from variety in form, colour, fulness, and perfume, the rose is more varied than almost any other flower.

Roses have been used medicinally in confections, both of the fruit and of the petals, and have been ever favourites with the pharmacien both from flavour and colour.

2. The brambles and blackberries, dear to our rustic population as the people's fruit—like the roses—are very variable in form, giving rise to innumerable species and varieties, and hence while some authors are content to class our native species under some fifteen names, others magnify them to as many as forty.

The truth is they are in themselves very variable, and though the raspberry is the only form cultivated as a fruit the different sorts of these would be a matter of surprise to those who only looked at the matter for the first time. The brambles have not received any attention as cultivated plants. Perhaps one reason being that the wild fruit is considered as good as it can become even in domestication. Anyhow, it is a great favourite with the poor, and we fear that blackberries enter rather largely into the composition of foreign wines.

Lately, too, blackberries in the shape of jam have been considered as a confection not to be despised by the more fortunate class of society.

Both briars and blackberries are to be reprobated as weeds, for when they find their way into the hedge-row, and they do this constantly through the medium of birds, it is to ruin the hedge from which it be not sedulously removed. The briar, after flowering, usually dies down and sends up new suckers, while the blackberry—at least many species, root from the end of their trailing branches—locally called "lawyers," because they lay hold of all within their reach,

and thus the pest is extended from hedge to ditch, and indeed is capable of spreading indefinitely.

3. The strawberry, like the raspberry in its wild state, presents white and red varieties, and is as capable of variation both in growth, habit, flower and fruit and flavour, as any one of the order; hence new sorts of strawberries are constantly occurring, and, like the other favourites, are always being added to.

As a fruit the strawberry is a general favourite, and deservedly so.

Speaking of the changes which the wild forms undergo, we find the following in the superb new edition of the English Flora in reference to the strawberry:—"The mysteries of horticulture, and the varieties of fruits of all sorts which are produced by the skill of the gardener, increase so rapidly that our native fruits, in which they originate, can scarcely be recognised as related to the beauties which adorn our tables. We see and admire the superb Myatt's Seedlings and British Queens, and can hardly trace in their luscious richness the likeness of their humble parents."

In our wild rambles we have found the wild strawberry to be most refreshing, and confess to be of those who enjoy the wild as much as the cultivated sorts, but they must be fully ripe, and, indeed, both the wild and garden fruts are imperfect unless in a ripe condition.

4. The tormentils and cinquefoils are remarkable for a strawberry-like form of growth, but with dry seeds, instead of being surrounded by the delicious pulp of the strawberry.

The tormentil — *Tormentilla officinalis* — for a long time was celebrated as a medicinal plant. Its tuberous root is reputed to be astringent, and, indeed, astringency seems to belong to a large part of the family. It is, however, now but little esteemed. Professor Lindley gives the following generalization which we deem interesting:—"No roseworts are unwholesome; they are chiefly remarkable for the presence of an astringent principle, which has caused some of them to be reckoned febrifuges. The root of *Tormentilla* is used for tanning in the Feroe Islands. *Potentilla anserina* has been employed in the same manner, and *P. reptans* as a febrifuge."

Many innocent qualities have been attributed to the roseworts, the knowledge of which we think may be profitably extended, and it is fortunate that this is without alloy, as noxious qualities are admitted on all hands to be out of the question.

While treating of the roses it should be mentioned that a fragrant oil is derived from the petals of some of the garden species, to which the name of otto or attar of roses has been given; it is much employed by the perfumer.

We have, however, now to speak of the cinquefoils, which, under the name of Potentilla—of these the *P. anserina* and *P. reptans*—are common weeds. The former is called silver-weed, from the silvery shade of its leaflets, the latter cinque-foil from the fact of its five leaflets. Both are arable and pasture weeds, and as such should be carefully hoed out, and so eradicated. How different from their former fame when Theophrastus, Dioscorides, and Pliny all speak of them as specifics for ague. We quote Mrs. Lankester for the following:—"Turner says, Dioscorides sayeth, but methynk that it smelleth of superstition, that in a quartayn the lives of four stalks ought to be taken, in a tertian the lives of three, and in a quotidian the lives of one stalk;" we suppose our author must mean the leaves, which are undoubtedly astringent.

There is no doubt that the very distinct five leaflets suggested the use of this plant in the different intermittent forms of ague, and so it is a curious illustration of the doctrine of signatures.

VETERINARY TOXICOLOGY.—YEW POISONING.

By John Gerrard, M.R.C.V.S., Market Deeping.

If the various communications on the above subject which appear from time to time in your columns accurately indicate the different opinions entertained by the profession, they prove pretty clearly that unanimity regarding the mode of action of yew, or when its poisonous principle is most active, has not been arrived at. The actions of poisons are generally regarded as determined by certain definite and specific signs and symptoms, either recognisable in the body after death or prior to its occurrence. These, however, are often obscure in some poisons, but in the case of vegetable poisons, and especially *yew*, the seeds and leaves are in such abundance in the alimentary canal as to leave no room to doubt. The only difficulty regarding it, is its mode of action, and the condition of the plant in which it is considered the most active. Probably, in a practical point of view, it is not of much consequence, or, indeed, in any way,

as its poisonous nature is all but universally admitted, and the subjects consuming it in sufficient quantity rarely survive its action so long as to admit of an antidote being applied, as the cases recorded in the May, and March numbers of your journal, testify. They also prove—to my mind at least—that the plant is most active in the green state, and I think, if the cases on record are considered, the preponderance of evidence favours this conclusion, the popular opinion to the contrary notwithstanding. Nor have I any doubt but that its mode of action is that of a *narcotico-irritant,* instead of a mere mechanical irritant, as advocated by Professor Buckman some little time ago in your columns. I trust he will excuse this personal allusion, as it is not meant to revive or invite discussion, but having had a good opportunity lately of observing the action of a simple irritant on the stomachs of ruminants, I thought it might be useful to him, and probably interesting to your readers, to place the symptoms and appearances on record, as it might tend to throw some light on the subject by way of contrast.

The cases to which I refer were caused by the action of (charlock) or wild mustard, and which were noticed in your columns at the time, and have since been investigated by Professor Tuson and Dr. Voelcker, whose reports on the subject leave no room to doubt.

A herd of thirty-seven cattle, including three cows, the others are about in equal number, one and two year olds, the property of one owner, received a moderate allowance—from three pounds to six pounds, according to age—of rape cake for their first meal about 7 a.m. on the 3rd of December, 1874, in three different yards. The cake was fresh from the mills the evening before, but they had previously consumed a ton of a similar kind, and partook of it readily. About 10 o'clock the three cows which had the largest share and were first served began to show symptoms of uneasiness, lying down and suddenly getting up again, stretching out their heads, and putting their bodies into all kinds of contortions, kicking, and moaning occasionally. By 12 o'clock all the herd, without exception, showed symptoms of colic, and the cows were now almost frantic, rushing unrestrainably through the yard; indeed, so insensible were they to external impressions that one of the cows, the only one that survived, threw herself down in the paroxysm against the wall with such force as to fracture the spines of the sacrum, which, eventually, I had to cut down upon and remove before the parts would heal.

By 2 o'clock all the cattle were very ill, and the scene

presented about that time was such as I shall never forget. It can be better imagined than described. The manifestations of pain were violent and persistent, such as made the task of administering anything to the animals a difficult and dangerous one, a state of matters which continued for several hours. A little past 4 o'clock p.m. the first cow died; after having subsided into a kind of stupor for about fifteen minutes, she gave a few frantic struggles, deep drawn inspirations, and sunk to the ground to rise no more. Every succeeding hour added another victim, and by 8 o'clock in the evening six had succumbed, and about midnight the last cow died after suffering extreme pain, despite all the sedatives and anodynes we could administer, making in all eight victims. The rest gradually recovered; but none of them commenced to eat before forty-eight hours had elapsed, and some of them not for four days. All lost flesh considerably, and the cow which survived wasted almost to a skeleton. Her milk, which was almost gone, gradually returned, and she is now in pretty fair condition, only minus portions of the spines of the sacrum. In none of the cases was the least tympanitis present, nor was there much distension after death. The most prominent symptoms were acute and persistent abdominal pain, indicated by the frequent lying down and getting up again, the breathing slightly accelerated, the surface of the body generally cold, with hair erect; dull, anxious expression of countenance, with complete suspension of defecation and urination.

The *post-mortem* appearances were those of severe irritation, causing congestion and inflammation of the mucous membranes of the fourth or true stomachs. In one case, however, it was wholly confined to the rumen. The colour varied from that of bright scarlet tinge to a Modena hue, nearly all through the abomasum, and was coextensive with the presence of the cake. On a close inspection slight abrasions or ulcers were observable, as pointed out by Professor Axe. Extensive effusion existed on the peritoneal coat of the abomasum, and where it is reflected on to the rumen it presented an appearance like white currant jelly, with slight serous effusion into the peritoneal sac. In the one case, where the rumen was the only stomach affected, the inflammation was not so uniform, but in patches; indeed, wherever the masticated cake had touched, there only was the redness visible, which showed conclusively that the source of irritation existed in the cake. The hearts of two of the animals which I examined were full of blood in all the compartments, showing death to have been by *syncope* or *asthenia;* the

lungs, and liver also, contained an unusual quantity of blood, in other respects they were healthy. The brain and spinal cord I did not examine.

Such is a brief and very imperfect description of well-marked cases of gastritis in the ox, occasioned by a substance the properties of which are well and widely known as counter-irritant and vesicant, and this, the *common* effect, was very observable on the mucous surfaces, and which we may safely conclude caused the death of these animals.

In no case of yew poisoning which I have ever examined have the appearances of irritation been so palpable as in these cases; nor do the symptoms produced by the two kinds of poison at all correspond. In these cases there was an entire absence of convulsions, paralysis, and inability to stand, which we find in the yew poisoning, nor are the symptoms in it so violent and persistent as were those I have recorded. On the contrary, the victims of yew seem to die almost without a struggle, with the poisonous morsel between their teeth sometimes, and before they have stirred from under the shade of the tree or soon after. The distension of the carcase is also always noticeable.

The conclusions deducible from these facts are that the yew, in addition to its irritant properties, contains some narcotic principle, which when partaken of in poisonous doses produce coma, suspension of the respiration, and death; while mustard acts only as an irritant, inducing violent gastritis and death by collapse.

Facts relating to the function of rumination.

Permit me space for a few remarks suggested by these cases on some points connected with the physiology of rumination.

It is a pretty general accepted doctrine that all solid food passes first into the rumen, to be returned thence by its own impulse, assisted by the action of the diaphragm and abdominal muscles, to be rechewed and returned to the third and fourth compartments of the digestive apparatus, to be rendered fit for assimilation.

In seven of these cases no trace of cake was observable in the rumen or omasum, while in one the cake was only found in the rumen, and no traces in any of the other compartments.

None of the cattle had ruminated after being fed; it was their first meal for the day, when it is fair to suppose the rumen would be pretty empty, yet only in one case did it enter it.

Being their first meal, and in all probability hungry, they would be all the more likely to chew it hurriedly, and imperfectly, and thus the more readily fall into the rumen. Whatever may have been the extent of comminution it had received under the circumstances, it did not fall into the rumens of seven of them, which would go to prove that the feeling of hunger lies principally in the fourth or true stomach, into which it is directed instinctively by the will of the animal as rumination is performed.

That in one case it did enter the rumen may be explained on the supposition that digestion had not been completed, or so complete as in the others, and that probably, as it was one of the year olds, it did not get its share of the cake so readily, or might have been mixed with straw in the chewing,

Whatever may be the explanation of these facts, whether the food is directed into the abomasum by the will of the animal to allay the cravings of hunger, or whether owing to its finely divided or fluid condition, or to the state of the rumen at the time, it is evident that all solid food does not pass through it.

It is also clear that under similar circumstances it may enter, and that death may result therefrom. If, then, death can be produced by a mechanical or other irritant entering the rumen, it follows that the system can be influenced through it by the introduction into it of medicine of an irritant nature in the solid form.

Query.—In giving balls of an irritating kind, as croton beans, to cattle, do they enter the rumen and produce their effects through it? In short, can purgation be produced through the rumen by any irritant introduced into it?

CARIES NECROTICA.

By Thomas Paton, Veterinary Surgeon, Army Service Corps.

On the 7th of January, 1875, a troop mare was admitted for treatment for "catarrh." The defluxion, which was almost confined to the left nostril, was slightly offensive in odour, and was ejected in thick purulent flakes, at irregular intervals.

The driver considers the present attack to be the return of a cold from which the animal suffered last winter; there is also a history of an accident which befel the mare about a year ago, when she fell over a temporary

manger, whereby, with other injuries, she sustained a contusion of the face, causing a swelling which, however, totally disappeared in a few days. This circumstance, however, did not attract any attention until the end of the third week subsequently to her present admission into the hospital, when evidence of disease of the bones was well marked; details of which will appear in order of date.

January 10th.—The discharge being now restricted to the left nostril, suggested the propriety of examining the mouth, internally and externally; no abnormal deviation was apparent. Isolation, cleansing the nostril, and feeding on steamed food, were ordered—no report of "quidding."

14th.—The discharge continues as before described; give as a stimulating expectorant,

℞ Ol. Tereb.
Sp. Æth. Nit. aa. ʒj;
Aqua 98° F. Oj;
Sacch. fæc. q. s.

15th.—Half an hour's canter did not increase the discharge; submaxillary glands enlarged.

16th.—On closing the right nostril by placing the hand over it, the breathing by the left is noisy, indicative of obstruction; the discharge is now continuous, and the mare licks it up as it runs over her lips, as if the taste was agreeable; the smell is decidedly more offensive.

20th.—From dulness on percussion of left frontal sinus, the diagnosis is collection of matter therein. On trephining the cavity a large quantity of stinking fluid pus was evacuated, and freely washed out of the artificial and nasal openings by copious syringings with tepid water, after which the sinus was injected with a solution of acid. carbol. 1 part to 80 of water. Percussion over the other sinuses yielded normal tones.

21st.—Discharge diminished in quantity and consistence; repeated the injections of sinus as yesterday, with much the same effect. Ordered Ferri Sulph. ʒj three times a day.

22nd.—Less fœtor; submaxillary gland more enlarged; first and second syringings discharged a copious stream of purulent matter, remainder passed clear.

23rd.—Discharge thinner, less in quantity—nasal mucous membrane hyperæmic, probably from irritation of carbolic acid.

29th.—The discharge gradually diminished from the last date until to-day, when it increased in every phase, but particularly as regards its fœtor. On manipulating the face

I fancy the fourth molar is loose, but cannot be sure of this without casting the mare, which is not convenient.

The carbolic acid having failed to subdue the fœtor, as an experiment try an injection of Ferri Sulph. ʒij to Aqua ℥viij.

Feb. 2.—The effect of the injection of the solution of sulphate of iron has been a fearful aggravation of all the symptoms, enormously increasing the enlargement of the submaxillary glands, the mucous membranes lining both nostrils being much thickened by œdema of subjacent areolar tissue, contracting the calibre of the passages and causing noisy breathing; the discharge is thinner, mixed with blood, and very fetid. On casting the mare to re-examine the mouth some slight roughness of the face and crown of the sixth left upper molar was detected; the whole of the teeth felt firm, but as the recumbent position threatened the mare with suffocation, it was necessary to set her free from the hobbles before percussion of the teeth could be carried out.

3rd.—There is swelling and pain along the zygomatic spine, which are supposed to be due to venous thrombosis, as the superficial facial veins have been turgid since the injection of the sulphate of iron into the sinus. The maxillary sinus was trephined over the point indicated in the plate at p. 482 of Professor Williams's 'Principles and Practice of Veterinary Surgery,' as suggested by Professor Varnell. This operation was followed by profuse hæmorrhage, which temporarily masked the condition of the bone, into which the trephine (after a few turns with only moderate pressure) entered more easily than it ought to have done. When the part was cleared of blood, &c., the opening displayed a dark honeycombed condition of the bones, presenting the fœtor which characterised the nasal discharge subsequent to the ferric injection. At this stage of the case the disease was decided to be disease of the bones of the face due to infiltration of scrofulous matter; and probably connected with injury sustained a year before, therefore not likely to yield to treatment.

4th.—Manifest loss of flesh, the mare cannot now chew her hay, which she vainly endeavours to do, but "quids" and rejects it, although she has an excellent appetite, and consumes her full allowance of chopped and steamed hay, corn, and bran.

9th.—A spattering of blood about the wall and manger led me again to examine her mouth, when I found the first and fourth left upper molars loose; having cast the mare, the first was extracted easily, by means of pincers, but the

fourth was removed with difficulty,with powerful (improvised) forceps, owing to its root being strongly attached to a dense fibrous substance, a portion of which was torn away. Both teeth appeared quite sound ; the fangs of the second and third molars were now found to be exposed, the palatine processes of the alveoli having disappeared. The removal of the teeth was attended by severe hæmorrhage, probably due to laceration of the palatine artery ; it was checked by plugs of tow soaked in a strong solution of carbolic acid.

10th.—Though the mare is quite cheerful, and consumes her full allowance of prepared food, the case being hopeless of restoration to usefulness, it was recommended that she be destroyed.

13th. — Destroyed. *Post-mortem Examination.* — The removal of the soft palate, which was perfectly sound, showed obliteration of the palatine processes of the superior maxillary bone, *entirely* on the left and *partially* on the right side. The teeth of both sides were quite sound, the second, third, fifth, and sixth left side being retained *in situ* by the attachment of their roots to a dense fibrous structure connected with an adenoid mass interspersed with cavities containing caseous matter in various stages of softening, more or less mingled with pus of a creamy consistence, which filled what remained of the posterior maxillary sinus. Iin the posterior bony plate of this sinus was a circular opening, by which doubtless some of the purulent matter migrated into the fauces, and, being swallowed, permitted the disease to express itself in so eccentric a manner, and to retard its earlier manifestation in the vicinity of the original injury. This may seem somewhat speculative, but must be admitted to be quite in keeping with nature's conservatism in many other cases.

The septum nasi and the Schneiderian membrane were unbroken in their integrity ; the submucous tissues were infiltrated by degraded plasma studded with spots of caseous matter. Several collections of caseous matter, about the size of racket balls, were encapsuled in the folds of the turbinated bones.

The submaxillary glands were greatly enlarged, and multilocular with cavities containing soft cheesy matters mixed with pus.

Several solitary transparent granulia (tubercles) were found in the lungs, which are sufficient to stamp the constitutional nature of the case.

The spleen, liver, &c., showed no abnormality.

The attempt at *repair,* evident over a large surface of the bones implicated by the caries, would seem to warrant the use of the term "necrotica," which was suggested by a medi-

cal friend for whose pathological knowledge I have the profoundest respect.

In thinking over this case a circumstance, which I entirely overlooked during the progress of it, has come back to my mind, viz., that during the latter part of 1874, when the animal was engaged in constant work, taking her turn of convoys, &c., and feeding well, her driver reported (and I saw) matters which she was said to have coughed up. The expectorated matter looked like that which might be evacuated by exploded vomicæ. Auscultation, condition, and working power of the animal, excluded the possibility of her being so affected, and the report was treated lightly, except that the driver was enjoined to keep a good look-out for the advent of any further signs; this must have occurred at least two months previously to her admission for the catarrhal symptoms.

The mare alluded to in this report was remarkable for the largeness and crystal-like brilliancy of her eyes; the vision was good, yet her shyness about the head, indicated by most vicious demonstrations—the literally opposing "tooth and nail" on being approached by any one but her driver, although perfectly submissive (even to strangers) when she found there was no ground of apprehension—led me to infer that mayhap she dreaded a renewal of blows on this side of the face, owing to the existence of pain which was not otherwise expressed, the more so as she could be approached on the "off," side without making any of those instinctive efforts at self-defence manifested so freely on approaching her by the "near" side. As I have frequently observed similar phenomena of temper in animals which have sustained injuries to the zygomatic spine, and occasionally when the vision has been affected, it would seem reasonable that more pains should be taken to ascertain the existence of any abnormality which might account for these exhibitions, whose cause is not always immediately obvious to the most experienced horseman. Again, the frequency of the affections of the left nostril, often due to external violence, directed against this the side of approach, is a severe satire on the humanity of men who have to do with horses, whose (physical) force of character is too commonly in the inverse ratio of their general intelligence.

Having forwarded the pathological specimen for your inspection and disposal in any way you may deem fit, I shall feel grateful for any editorial remarks you may please to make on the case, as my object in forwarding the account is to solicit information, and to eliminate truth, whose maximum we may fairly expect from the lips of our *alma mater*.

[We regret being unable to add anything to Mr. Paton's description of this case, as the specimen sent us was deprived of all animal matter by having been boiled or macerated.]

FAVUS.

By the same.

Ringworm having broken out among the men in these barracks, the horses were suspected as likely to have set the disease agoing, but on careful inspection they were found to be perfectly free from any contagious cutaneous disease. Knowing from past experience that the barrack mice were affected with the Achorion Schonleinii, and my attention having been drawn to the cat, the pet of the room in which more than a fourth of the men who were first affected were attacked, I found her head, fore limbs, and shoulders, occupied by the characteristic yellow, cup-like depressions, under the favus growth, which had deeply invaded the skin and in places destroyed it. This convinced me that pus was the source of the skin affection which had shown itself among the men. The destruction of the cat was followed by a crusade against the mice, a large per-centage of which were found to be suffering more or less from the ravages of favus, which had destroyed their ears, scalps, bones of the head, tails, etc. Inquiries in the neighbourhood showed that the inhabitants of this country are quite familiar with the disease—that it is especially fatal to mice, common in cats, children, and occasionally affects adults ; but has not been commonly recognised in horses, which are, perhaps, not likely to be contaminated, owing to grooming removing the cutaneous débris, which in dirty subjects favours the fructification of the cryptogamic sporules, once they are transplanted.

As this horribly contagious and very intractable disease, unless cured, causes baldness in the human subject, and can only be overcome by the painful process of *epilation* and the prolonged use of parasiticides, permit me to draw the attention of those who seek further acquaintance with the malady to the graphic description of "Favus" contained in 'Principles and Practice of Veterinary Surgery' by Professor Williams, whence I derived the information which enabled me to recognise the origin of the outbreak among the men, and to repel the notion that the horses were the source of an affection which at one time threatened serious inconvenience.

PLASTER OF PARIS BANDAGE.

By S. Gason Gowing, M.R.C.V.S., 1st Cavalry, U.S. Army, Benicia Barracks, California, America.

I am not aware of this bandage being used in our profession, but I have had considerable experience in its use, and wish to recommend it to veterinary surgeons as a most efficient remedy for fractures of the extremities.

The mode of application is simple. Bandages of the ordinary width having been carefully rolled up; unroll them about twelve inches at a time, and spread DENTAL plaster of Paris about $\frac{1}{8}$ in. in thickness over them. Next plunge one of them into some warm water, and having rolled them up again, apply them to the fractured limb with as much despatch as possible, previously sewing on a piece of flannel to prevent the plaster adhering to the skin. If all the plaster has not become damp you can wet it as you proceed.

It will be required to have the application about one inch and a half in thickness to secure its not giving way; keep the limb after putting on the bandage in as stationary a position as you can, and the plaster will set in a few minutes. When the inflammation subsides you will perceive there will be a space between the bandage and the leg. In medical practice it is usual to remove with a saw a sufficient portion of the bandage to allow it to lie close to the leg, and apply a new one over it; this, however, does not succeed so well with our patients, as you are very apt to again displace the bones, from being unable to keep the animal still. I have found dusting in some of the plaster and then pouring on some water a very successful mode of proceeding. The bandage can be removed in one month from the time of putting it on.

Be sure and have the plaster of Paris PERFECTLY DRY, otherwise it will not set.

REMARKS ON THE RECENT TRIAL RESPECTING FOOT-AND-MOUTH DISEASE.

By "Mackcam."

This question among many others is suggested by what we have recently heard of veterinary professors and "foot-

and-mouth" disease—*In what time after the contracting of the disease are the lesions repaired sufficiently to give no evidence of the existence of the disease?*

Having had some experience of the disease with farmers, dealers, &c., I am in a position to state that the answer to the query is well known to many of the latter, who have found it *to their interest to exercise their powers of observation;* and so "cute" have they become by long acquaintance with the disease in all its stages, and by a just estimate of the veterinary inspector's knowledge of it, that the appearance of the disease in their flocks gives them but little anxiety; nor, except in unusually severe cases, does it delay the removal of the animals to "pastures new," or their exposure in fair or market, for so long a period as some veterinary surgeons appear to believe necessary before it ceases to be readily detected.

Yours, &c.

To the Editors of the 'Veterinarian.'

Pathological Contributions.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the Month of April, 1875, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

"Also, whether the Foreign Ports from which the Animals are brought are in Scheduled or Unscheduled Countries, and the Number of Healthy Animals brought in the same Vessels with the Diseased Animals, and the mode in which such Healthy Animals have been disposed of, whether by slaughter or otherwise.

SCHEDULED COUNTRIES.

Ports in Scheduled Countries from which brought.	Ports in Great Britain to which brought.	Disease.	Diseased Animals. Number of Diseased Animals. Cattle.	Sheep.	Goats.	Swine.	Total.	Disposal.	Healthy Animals.* Number of Healthy Animals brought in the same Vessels with Diseased Animals. Cattle.	Sheep.	Goats.	Swine.	Total.	Disposal.
Antwerp . .	London . . .	Foot-and-Mouth	199	104	...	...	303	Slaughtered under the instructions of the Privy Council.	341	31	...	...	372	Slaughtered under the instructions of the Privy Council.
Boulogne . .	,,	,,	25	...	...	...	25	Ditto	40	...	...	...	40	Ditto
Bremen . . .	Hull	,,	...	11	...	...	11	Ditto	18	19	...	...	37	Ditto
,,	London . . .	,,	346	6	...	...	352	Ditto	399	4	...	...	403	Ditto
,,	,,	Pleuro-Pneumonia	3†	...	...	...	3†	Ditto	...	...	...	...	...	...
Bremerhafen .	Hull	Foot-and-Mouth	...	4	...	...	4	Ditto	25	249	...	...	274	Ditto
,,	,,	Sheep Scab . .	...	39	...	...	39	Ditto	24	148	...	...	172	Ditto
Hamburg . .	Grimsby . . .	Foot-and-Mouth	...	...	...	104	104	Ditto	...	...	...	232	232	Ditto
,,	Hartlepool . .	,,	14	5	...	...	19	Ditto	111	667	...	...	778	Ditto
,,	Hull	,,	138	12	...	43	193	Ditto	798	647	...	41	1486	Ditto
,,	London . . .	,,	395	...	...	25	420	Ditto	254	...	...	...	254	Ditto
,,	Newcastle-upon-Tyne . . .	,,	...	62	...	...	62	Ditto	...	1192	...	...	1192	Ditto
,,	Sunderland . .	,,	...	4	...	...	4	Ditto	...	518	...	...	518	Ditto
Ostend . . .	London . . .	,,	2	...	...	26	28	Ditto	46	...	...	17	63	Ditto
Total Diseased Animals .		Pleuro-Pneumonia	3	...	...	...	3	Total Healthy Animals .	2056	3475	...	290	5821	
,, ,, ,,		Foot-and-Mouth	1119	208	...	198	1525							
,, ,, ,,		Sheep Scab . .	...	39	...	...	39							
Total			1122	247	...	198	1567							

UNSCHEDULED COUNTRIES.

Gothenburg .	Hartlepool . .	Foot-and-Mouth	36	...	...	...	36	Ditto	38	...	...	...	38	Ditto
,,	London . . .	,,	185	...	...	...	185	Ditto	153	...	...	...	153	Ditto
,,	Newcastle-upon-Tyne . . .	,,	48	...	...	...	48	Ditto	40	...	...	...	40	Ditto
Rotterdam . .	Hull	,,	2	...	...	...	2	Ditto	112	...	...	...	112	Ditto
,,	London . . .	,,	...	...	...	9	9	Ditto	...	...	...	571	571	Ditto
Total Diseased Animals .		Foot-and-Mouth	271	...	...	9	280	Total Healthy Animals .	343	...	...	571	914	

* "Healthy Animals" means Animals which were not found to be diseased on inspection on landing.
† These cattle were brought in the same vessel with others affected with foot-and-mouth disease.

"Veterinary Department, Privy Council Office, May 13th, 1875." "ALEXANDER WILLIAMS, *Secretary.*

CATTLE PLAGUE.

The outbreak of cattle plague which was reported to have occurred at Wuzen, in Saxony, has not extended beyond the district. An investigation into the nature of the disease has thrown some doubts on the first impression. The absence of diarrhœa in all the animals affected, and the impossibility of tracing the origin of the infection, have led some veterinary authorities to infer that the malady was a malignant form of catarrhal fever rather than true rinderpest.

From Warsaw it is reported that cattle plague continues to prevail in twelve districts in the kingdom of Poland. The disease is diminishing in Croatia, and also on the military frontier. Hungary proper continues free.

From Alexandria we learn that cattle plague has committed sad ravages in Assiont, 367 deaths having occurred between March the 3rd and the 17th. Cattle plague has declined in Salmica.

FOOT-AND-MOUTH DISEASE.

It will be seen by the official returns that foot-and-mouth disease is still very prevalent in different parts of the Continent.

The number of diseased animals landed on our coast was, however, considerably less than during the former month.

Facts and Observations.

Improved Cattle Pens for use on Board Ship.—In these days of dear meat any means by which the importation of cattle from abroad can be facilitated, and the cruelties and suffering to which the animals are now subject can be obviated, should be hailed as a boon by all beef-eating persons. This object is sought to be obtained by improved cattle pens for use on board ship. Models of these pens were exhibited yesterday at the office of the inventor, 34, Leadenhall-street. The pens are each constructed to hold four cattle. At the hinder part of the pen there is fixed a band

of india-rubber machine-belting sufficiently strong to keep the animals in their places, and yet sufficiently elastic to prevent their being hurt by being forced against it by the movement of the vessel. The side partitions are made of ash wood, which rebounds slightly when the animal is thrown against it. The partitions have a space above the deck to permit of the litter being removed, and the deck upon which the beasts stand has battens secured to it crossing the pens at an angle of 45 degrees, on which india rubber is placed, so that the battens not only give a firm foothold but are sufficiently soft to prevent injury to the animals in the event of their falling. There are besides a number of minor contrivances for the comfort of the animals, and the arrangements generally appear to be calculated to ensure their being brought to land in as good a condition as they were in when they were shipped.

Loss of Cattle in Asia Minor from Famine.—A correspondent writing to the *Daily News* on the 20th of February, says:—The prospects of our agricultural classes are gloomy in the extreme. To add to their distress, great mortality prevails amongst their animals. With characteristic improvidence the Turkish peasant makes no provision for the foddering of either his cattle or sheep; he trusts to providence or luck, and turns the poor creatures out into the open fields and commons to take their chance of what they can pick up. I have heard of a case of ten sheep alone remaining out of a flock of a thousand; and this is not considered an exceptional one. The country, I am told, is literally strewn with the carcases of sheep and oxen, and those animals that have escaped starvation are such mere bundles of skin and bone that they will not be fit either for the shambles or for labour for a long while to come.

Guano.—The Bill for the future management of guano has passed the Peruvian House of Deputies. Its three principal features are—1. The minimum price is fixed at £5 10s. per ton of guano, containing from 10 to 11 per cent. ammonia. At this standard guano will be sold from the different depôts. This rule, it is alleged, will entirely prevent the exportation of low grade fertilisers, and will ensure to cultivators a better knowledge of guano than hitherto possessed. 2. The amount to be sold annually is 650,000 tons, which will be divided proportionately among the different countries in accordance with the demand known at present. 3. The contract for each market will be given to the tenderer that offers the greatest advantages to Peru. The contracts to last four years, and

every holder of one to enjoy the entire monopoly of sales in the territory designated in his tender. The Bill has yet to pass the third reading and the Senate before it becomes law, under which sales will be made at the expiration of the contract with Messrs. Dreyfus.

Analysis of Various Milks.—A contemporary, giving "C. A. Cameron, M.D.," as its authority, states that from forty analyses of cows' milk the following were the results:—Water, 87·00; fats, 4·00; albuminoids, 4·10; sugar, 4·28; mineral matter, 0·62. An average of fourteen specimens of mares' milk gave—water, 90·310; fats, 1·055; albuminoids, 1·953; sugar, 6·285; mineral matter, 0·397. Mares' milk is bluish-white; specific gravity about 1·031; reaction neutral, or faintly alkaline. Two analyses of sows' milk showed the following results:—Water, 81·760; fats, 5·330; albuminoids, 6·130; sugar, 5·335; mineral matter, 0·895. These results show this species of milk to be very rich. It is remarkable that in the lactometer it shows up no cream. Drying on the water-bath it exhales the odour of roast pork, and on putrefying that of putrid bacon.—*Land and Water.*

On the Influence of Extirpation of the Eyeballs upon the Colour of Certain Animals. By M. G. Pouchet. (*Robin's Journal de l'Anatomie*, Sept., Oct., p. 558.)—In July, 1873, M. Pouchet visited an aquarium in Vienna, and had his attention directed to a sole which was much darker in colour than any of its comrades in the aquarium. He found on examination that the fish had double cataract; and in Stricker's laboratory he performed numerous experiments on fish, to ascertain whether or not there was any connection between vision and the colour of the skin. He found invariably that ablation of the eyeballs caused permanent dilatation of the black chromoblasts of the skin, so that fish which had been subjected to this mutilation could be readily known from others in the same aquarium, and exposed to the same amount of light. He offers no explanation of this curious result. It agrees with the fact that fishes and amphibians living in subterranean waters have weak organs of vision, and are of a dark colour. On the other hand, it does not harmonise with the observation that terrestrial animals having weak eyes, or none (with the exception of the mole), are usually light in colour.—*Edinburgh Medical Journal.*

On the Influence of the Brain on the Temperature of the Body. By J. Schreiber. (*Pflüger's Archiv*, 1874, Bd. viii.)—Tscheschichin first observed, experimen-

tally, that there is somewhere in the brain a centre which regulates the temperature of the body. His conclusions have been called in question, notably by Heidenhain. The present research by Schreiber shows that when any part of the pons varolii, the cerebellum, the central peduncles, or the hemispheres, is injured, there is a diminution of the temperature of the rectum (1°—6°), if the animal be placed in an atmosphere the temperature of which is relatively low; but if it be kept warm, either by being placed before a fire or by being wrapped up in cotton-wool or flannel, there is an increase of from 1°—3°. Schreiber therefore supposes that injuries do not diminish the production of heat, but simply place the animal in a condition in which there is greater difficulty in maintaining a normal temperature. On the other hand, Schreiber found that an injury inflicted on a narrow area, separating the upper limit of the medulla oblongata from the pons, was always followed by a permanent increase of 3°—5°, even when the animals were placed in a cold atmosphere. These researches are of great interest, as bearing on the pathology of fever, and they support the views long advocated by Professor Laycock as to the existence of thermal centres.—*Ibid.*

The Formation of Bile-pigment in the Animal Body from Blood-pigment. By J. F. Tarchanoff ('Pflüger's Archiv für Physiologie,' ix, 53—65).—The author criticises many of the conflicting assertions which have been made relative to the alleged change of blood-pigment into bile-pigment in the urine, and has himself experimented upon the subject. He finds that the injection of hæmoglobin solution into the veins produces bile-pigment in the urine; and that the injection of water effects the same result in a lesser degree. Normal urine contains no bile-pigment.

Tarchanoff thinks that the indigo-forming substance of normal urine has been mistaken for bile-pigment, and gives a method of separating the two substances. The urine is precipitated by milk of lime, and the excess of lime removed by a stream of carbonic anhydride. On filtering and washing with cold water, the indigo substance passes through whilst the bile-pigment remains on the filter. This may then be dissolved in acetic acid and tested.—*Journal of the Chemical Society.*

THE VETERINARIAN, JUNE 1, 1875.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

VIVISECTION.

It is fair to presume that some attempt will be made by the legislature to regulate the practice of vivisection.

Lord Henniker has introduced a Bill into the House of Lords for this purpose; and Dr. Lyon Playfair, in conjunction with Mr. Ashley and Mr. S. Walpole, has the charge of another measure for the same purpose in the House of Commons.

Lord Henniker proposes to limit the practice of vivisection to certain places, which shall be licensed by a Secretary of State, and to further insist that, with certain exceptions which are to be the subjects of special license, the animals experimented on shall be under the influence of some anæsthetic.

Dr. Playfair's Bill does not interfere with the places where experiments may be carried on, but requires that the operators be licensed by a Secretary of State. Experiments may be made without anæsthetics for the purpose of new discovery.

The *Field*, in commenting on the proposed Bill, makes the following terse remarks:

While, on the one hand, the regulations imposed upon the practice of vivisection are on the whole satisfactory, the bill does not provide any machinery for their due execution. The complaint of the agitators against vivisection is that the experiments are conducted in secret, and by men who, however skilful and scientific, have, by familiarity with the infliction of pain upon the brute creation, come at length to disregard the suffering they cause. Now, if this be so—a very questionable point, we think—who is to see that the experiments licensed by the measure are carried out in the manner thereby prescribed? It will be no one's interest to tell what goes on in the laboratory then any more than it is now, and the public, being just as much in the dark as to what is going on as ever, will be just as prone as they are now to believe the

tales of cruelty that have been, and doubtless will continue to be, so recklessly promulgated. Then, on the other hand, the limitation of experiments to the purpose of new scientific discovery only, will by no means satisfy the operators. In principle the restriction is a good one; but surely there must be many exceptions to it, if vivisection is to be allowed at all. Are all the results of past experiments upon living animals conclusive? Can we be certain that fresh discoveries in medical knowledge and in the properties of drugs will not upset the theories hitherto accepted as true? And if it be suspected that the labours of the vivisectionist in some particular branch of physiological research may require revision, are experiments, once deemed conclusive, not to be undertaken afresh, in order that doubts may be either set at rest or shown to be valid? These are difficult questions, that cannot be answered in a moment, or be solved by hasty legislation.

The questions in our view of the matter are simply unanswerable. It is impossible by Act of Parliament to determine when experiments are necessary and under what conditions they should be undertaken. The opponents of vivisection on the plea of humanity demand that the system be prohibited under penalties, and their demand is quite intelligible—one, in fact, which could be readily translated into the terms of a short Act which no one could misinterpret; but, for some time to come at least, no such measure is likely to become law. When, instead of prohibiting a practice, the attempt is made to restrict and regulate it, difficulties of no ordinary character present themselves, and it may be doubted if either of the proposed Bills will attain the object in view. Those who feel that the act of the legislature interferes unjustly with their right of investigation will consider themselves justified in acting as if no law existed, and it is in the last degree unlikely that their proceedings will be made public. No right of entry into a man's private laboratory or study exists or is likely to be enforced, and the physiologist who has obtained a license will consider himself free to pursue his studies in any direction, while the unqualified investigator, who knows that for him no license is obtainable, will merely take extra pains to keep his proceedings secret.

Our experience of the operation of the Contagious Diseases

(Animals) Act enables us to form a very distinct idea of the tacit opposition which may be offered to any measure which attempts to define the limits beyond which a man may not go in dealing with his own property. The effective operation of the Act depends on the discovery of disease. The owner of a diseased animal is bound by law to give notice of the existence of disease. The owner calmly ignores the obligation and the Act becomes a dead letter. It is surely far more easy to conceal a dog, rabbit, or guinea-pig, than a diseased cow; and given that the motive for concealment is only equally strong in both cases, the vivisector has the advantage; but, in fact, the scientific inquirer has a much stronger motive for action than the cow-keeper, to wit, an enthusiastic love of his science, not to be controlled by legal definitions. We do not suggest that no action on the part of the legislature is necessary, we merely state our conviction that legal enactments will not diminish the practice of vivisection one jot—they will only tend to keep the system out of public sight.

THE FITZWYGRAM PRIZE.

We have much satisfaction in stating that the Fitzwygram "*First Prize*" *of fifty guineas* has been obtained by Mr. J. H. Steel, late student of the Royal Veterinary College, son of Mr. Charles Steel, V.S., 12th Lancers.

The other five competitors, we are informed, failed in obtaining the required number of marks to enable them to compete in the final examination for the "*Second*" and "*Third Prize*" of *thirty* and *twenty guineas* respectively.

Our readers will not have forgotten that Mr. Steel and his two fellow students from the Royal Veterinary College were volunteer competitors, who only knew they would be eligible a few days prior to the time fixed for the examination, arising out of the change made by the Committee in extending the competition to veterinary surgeons who had just obtained their diploma. He wins the *First Prize*, therefore, without any extra preparation for the examination either on

his part or on the part of his teachers—a fact which redounds greatly to his credit.

We might end our comments and congratulations here but for the circumstance that Mr. Fleming has seen fit, in a communication which we subjoin, to severely criticise the statements in our LEADER of last month on the want of well-matured plans in carrying out the liberality and good intentions of the donor of the prize.

Our reply must be addressed to our friend in his individual capacity, and not as our confrère in the management of this Journal. This is rendered the more necessary both by his present position and ours, he having intimated his intention to retire from its management. On reading his letter we exclaimed, Well! if zeal begets so much indiscretion, we are not surprised at the mess which was made in arranging the details of the examination scheme. This intemperate communication will surely speak for itself, and, however much we may regret such a result, will carry with it its own condemnation.

For ourselves we may add that it is true we are accustomed, when occasion requires, to express our opinions boldly both by pen and mouth; but we are not accustomed to attach motives of an unworthy kind to those from whom we differ. Notwithstanding the attempt which our friend has thus made to divert attention from the real facts of the case, we unhesitatingly affirm that our statements remain unimpeached and unimpeachable.

THE FITZWYGRAM PRIZES.

By GEORGE FLEMING, M.R.C.V.S., Royal Engineers.

IN the May number of the *Veterinarian*, in a leading article on Colonel Sir Frederick Fitzwygram's generous gift of one hundred guineas annually for prizes to be awarded to students or recently elected veterinary surgeons, remarks are made which do but little justice to the donor, while very unfair and unfounded statements are published which are calculated to do mischief and injury to the examining board of the Royal College of Veterinary Surgeons. It is stated that the good intentions of the donor have to some extent been defeated, that this failure is to be mainly attributed to the precipitate haste which has marked the proceedings of the

Committee appointed to carry the scheme into practice, and that the very existence of the scheme itself may be endangered.

One cause of this failure, it is alleged, is that what was supposed to be the original intention of Colonel Fitzwygram was modified in so far that, instead of veterinary students competing, those who had recently obtained the diploma of the Royal College of Veterinary Surgeons were eligible, and that this alteration was published too late to be acted upon by the managers of the London School. This may have been the case, but the scheme was rightly understood by the other veterinary schools, and the students attending them received notice, I believe, in good time. But the writer of the leading article, in pointing out that the students of the London School could not compete as such, in consequence of their diploma examination occurring earlier than that of those in Scotland, writes: "This difficulty we had foreseen, and consequently no notice was given to the class of the intended prize competition." That the students and graduates of the Veterinary College knew nothing of the competition is, as I have been informed by several of them, quite true, but the fault rests with those who were informed sufficiently early, and who might have furnished the students with the information in plenty of time to allow them to prepare for the competition. Besides, the confession that a difficulty was foreseen, which is offered as a reason for not informing the students, really makes the case worse; as although the writer of the article is a member of the Council of the Royal College of Veterinary Surgeons, and I presume an *ex officio* member of the Board of Examiners, he never gave the slightest intimation to these bodies of the existence of such a difficulty, never offered a word of advice or gave assistance in any way, but now makes his foresight an excuse for keeping the students of the Royal Veterinary College in the dark with regard to the competition; when, had he been actuated by the desire to aid in carrying out what is undoubtedly a beneficial object, he would have taken care to report the supposed difficulty, and suggest how it might be overcome.

The writer also, in speaking of the graduates of the Edinburgh Veterinary School chancing to be excluded from the competition through delay, remarks: "How this delay happened we do not know; but it goes to prove the incompleteness of the arrangements." Before making such a statement the writer might have made some inquiry as to its correctness. The examiners appointed by Colonel Fitzwygram did me the honour to place the arrangements for conducting the

examinations almost entirely in my hands, and those who are acquainted with the history of the examination will, I am sure, be ready to testify that nothing of the kind could be more complete. The Edinburgh graduates were too late for the examination for the simple reason that they could not, like Roach's birds, be in two places at the same time; they were being examined for the army at Piershill Barracks, when they should have been in the examination room. This was the cause of their exclusion.

Twelve gentlemen gave in their names for the competition; six competed, and of these only one obtained the necessary number of marks. This gentleman is Mr. Steel, who received the first prize.

The writer alludes to the course taken by the Royal College of Veterinary Surgeons with regard to their examinations in general, which, I suppose, are also considered by him hasty, ill-considered, and otherwise to be condemned. Charges of this kind are most fittingly brought forward at the meetings of Council, where they can be properly answered and examined. If they are as unfounded as those he has brought against the gentlemen who conducted the prize competitive examination, and also against the munificent donor himself, who largely exerted himself in order that the examination might prove a success, they will not be repeated there. As a co-editor of the *Veterinarian* I feel it to be my duty to the profession and to myself to disclaim any participation in the sentiments of the writer of the leading article in question, or sympathy with the object he has in view. A very different tale could be told from that he has published; but telling such tales do us no credit.

Extracts from British and Foreign Journals.

ON THE USE OF AUXILIARY AND ARTIFICIAL FOOD FOR LIVE STOCK.

That warmth is equivalent to food is a scientific truth that every intelligent farmer is prepared to admit, and the best practice is based upon it in cattle-rearing and feeding. At this time of the year, and especially when at present the weather is exceptionally cold, high feeding is the rule, and artificial foods of every description are freely used. In this category we include not only cereals, the mixed meal cakes,

linseed, mustard, and other cakes, but also compound or manufactured foods, and condiments professedly designed to stimulate the appetite and to promote the digestion of the food. Since the winter feeding of stock came in we have been asked by several correspondents to give an opinion on the relative values of various well-known feeds and condiments. It will be evident that we cannot enter upon an inquiry into the precise composition of compounds well known in the market, in explanation of our views of their relative values. The conclusions come to would be invidious and unsatisfactory. There are, however, certain general principles that the breeder of stock will do well to study, by the aid of which he will be enabled to apply the facts and information of experimentalists to his own case, and to become capable of using the auxiliary supplies of cattle food that are available to him with true economy. On this subject Mr. Lawes' opinion is of the utmost value. His experience has been large and also precise, and he tells us that if a manufactured cattle food is to be used with profit by the feeder, it must possess one of the three following qualifications:

1. The food must furnish the constituents contained in ordinary stock food, such as barley, beans, locust beans, maize, cakes, linseed, &c., at a cheaper rate than they can be purchased in those materials.

2. The food must be the product of a process for separating from the raw material something which commands a relatively high place in commerce, and leaves a residue which can therefore be sold at a sufficiently cheap rate for feeding purposes.

3. Supposing the food to be a mixture of the various ordinary food-stuffs in the market, the feeding value of these must be so increased by judicious combination and preparation beyond that which they possess if purchased separately, as to cover cost and profits of the manufacture.

The first supposition, namely, that a manufactured food will supply the constituents required at a cheaper rate than they can be purchased in our ordinary stock food, he tells us may be dismissed at once, for he does not imagine that any manufacturer of such foods pretends to claim the monopoly of the raw materials of which they are made up. Under the second head he includes the well-known and highly-esteemed articles—linseed-cake, cotton-cake, and the like. These foods are the residues of the processes of manufacture, the primary object of which is the separation from the raw material of certain substances which command a

high price in commerce, and leave a residue which the manufacturer sells for the best price he can get. In the case of linseed, for example, when there is an active demand for the oil and not for the cake, the crusher is glad to sell his cake at a low price; but when, as at the present time, there is more demand for the cake than the oil, he reduces the price for the oil but not for the cake. The price of the cake, which contains all the constituents of the linseed, which are valuable for manure, and a larger proportion of those which are valuable for feeding, is, however, always lower than that of the raw material from which it is made, namely, the linseed itself. At the present time the price of linseed is from £15 to £16 per ton, and that of linseed cake from £12 to £13 per ton; and with this relatively high price for cake a ton of seed is as cheap as a ton of cake for feeding, but the manure from it will not be of quite so much value. With regard to the third supposition, he observes that, by judicious mixture and preparation, the feeding value of the ingredients of a compound food may be so increased as to cover the cost and profit of the manufacture. So far as he is aware, no account has been published of any feeding experiments the results of which in the least degree disturb the conclusions arrived at in the long series published by him some years ago. Those experiments all pointed to the conclusion that there was but little hope of producing a compound food which would pay the cost of the manufacture. On one occasion a farmer summed the whole of the results of Mr. Lawes' very elaborate experiments on pig-feeding in the sarcastic remark, "There's nothing beats barley-meal." This remark, however disheartening, Mr. Lawes says, embodies a truth which both the manufacturer and the purchaser of cattle foods would do well to weigh. In many of our natural staple cattle foods the balance of the constituents is such that it would not be easy to improve upon it, or where improvement is possible or needed, the farmer can accomplish this for himself much more cheaply by judicious mixture or change of the raw materials at his command than the manufacturer can do it for him. With regard to condiments, Mr. Lawes expresses an opinion very unfavorable. "The conclusions," he adds, "that I arrived at many years ago, after careful experiments on the use of them with both sheep and pigs, remain unchanged. The results of those experiments were conclusive against the assumption that the use of the so-called condiments increases the assimilation of the food by fattening animals in a state of health. They were equally conclusive in

showing that loss, not profit, to the feeder, was to be expected from their use." These are decided opinions, and coming from such an authority they are entitled at the present moment to great consideration. A liberal expenditure in artificial food is the great feature of modern agriculture, and the means of promoting an increased production of meat and grain ; and in face of the increased expenditure in farm management, it is incumbent that the practical farmer should use the proper economy in that department of purchased feeds and manures. Where to buy feeding stuffs he can easily find out, and protect himself against adulteration by analysis, by co-operating with others through the agency of the established associations ; but what to buy for the purpose of pushing on his fattening stock is knowledge only to be obtained by his own lengthy experience, or by studying the principles of science as laid down by the best authorities on animal and vegetable chemistry and physiology. As an illustrator of this branch of agricultural science Mr. Lawes stands pre-eminent, and in this case we are indebted to him, not only for what he tells us, but also for the explicit and clear manner in which he "says his say" on the subject.—*Land and Water.*

COCCOBACTERIA SEPTICA.

In order to place before our readers an account of the observations and opinions recorded by Billroth, in his large work on the Coccobacteria Septica,* we give the following literal translation of the abstract of the book by Senator in Nos. 29, 30, and 31 of the *Centralblatt* of the current year.

The smallest elements of those organisms which are found universally in putrefying liquids, those round or oval bodies which oscillate in thin media, which other authors call *Monades, Microccen, Microsphären,* and *Microsporen,* Billroth calls "Coccos." The most minute species, *Micrococcos,* are always found in putrefying blood ; the middle-sized, *Mesococcos,* as a rule in not very old acid milky serum ; the largest, *Megacoccos,* are plentiful during the first twenty-four to forty-eight hours in concentrated "flesh-water ;" but these latter Billroth is only acquainted with in a state of rest. One of these three species always preponderates in each

* Th. Billroth, 'Researches in Regard to the Vegetable Organism of Coccobacteria Septica, and their Connection with the Origin and Increase of Wounds.' Berlin, Reimer, 1874.

kind of fluid. If air is introduced, every coccos develops a slimy veil round itself on the surface of the fluid, through which each separate globule blends with the others and forms first a smooth surface (Petalococcos), and then irregular balls (Gliacoccos). If the air is excluded, the Gliacoccos organizes itself but sparingly, and what is already developed falls into a weakly cohering flaky mud. Solution of iodine and iodide of potassium colours the coccos light yellow; mesococcos from milk, yellowish red; in the uniting slime (Glia), acetic acid, liquor potassæ, and alcohol bring about no change; iodine, aniline, madder, and ammoniacal solution of carmine do not colour it at all.

The coccos increases by means of transverse cleavage after a previous elongation, which occurrence Billroth has twice directly observed. Certain appearances seem also to point to a longitudinal cleavage. The small forms never grow into independent larger ones, but grow only to divide, whilst the larger ones frequently fall to pieces and become smaller ones. From want of oxygen, from the addition of common salt or saltpetre, or from unknown causes, coccos dilate.

With the Petalococcos are not to be confused certain delicate, colourless amorphous pellicles, which appear beside it in many fluids, but which never grow and never fall to pieces, which furthermore contain individual coccos, and which are perhaps inorganic.

In fluids not in a state of motion (beside the Gliacoccos) there are formed, through division in one direction, chains (Streptococcos) of different lengths, more or less twisted, each link of which divides itself again, and so can assist the growth of the chain; the links hang together by means of the (invisible) slime. When air was withdrawn the plasma came out of the globules as an amorphous granular substance.

The skin upon the surface of many putrefying fluids (flesh-water) shows when carefully manipulated and slightly magnified grayish-green knotty or cylindrical figures, full of micrococcos, which are held together by a very glutinous glia. These globules Billroth saw now and then suddenly burst open in a certain spot and empty out the micrococcos, whereupon the globular mass drew itself together and folded, so that it appeared to be made of a membrane. In many preparations this appearance could be seen directly, and it was of a variable thickness. This "Ascococcos," a coccos inside a tube, is regularly emptied through the orifices in the tube.

The Bacteria, by which Billroth designates only really

rod-shaped organisms, occur as micro-, meso-, and mega-bacteria, the first of which can only be recognised by Hartnack's system No. 15, and can scarcely be distinguished from the Diplococcos. The two larger forms very generally appear arranged together in a double manner (Diplobact.). A Glia also unites bacteria (Petalobact.), but the formation of a mass, as in the case of the Ascococcos, never occurs in the larger ones, but seldom in the smaller ones, sufficiently accounted for by the lively motion of each individual bacterium. The propagation of bacteira occurs sometimes through transverse furrowing and tearing of the covering glia, but sometimes from certain permanent spores (*Dauersporen*) of Gliacoccos by a process of outgrowing. The conditions requisite for this kind of growth and for the existence of micro-, meso-, or mega-bacteria differ according to the nourishing fluid, ventilation, &c. Through continued growth lengthways and a transverse furrowing the strepto-bacteria take their origin, the links of which hang together for a shorter or longer time, and finally tear themselves away and begin to move, that is when in a thin medium. The longer the chain the slower in general is its movement. At 60° C. the motions of bacteria ceased entirely, and after five hours they did not return at the ordinary temperature of he room, if even later is doubtful. Ciliary movements could not be observed even by the most different stainings of the bacteria. By complete exclusion of air the smaller forms of mono-, diplo-, and strepto-bacteria alone develop, which soon become colourless and fall to pieces. In the megabacterium chains from the pericardial serum Billroth saw the granular plasma disappear from some of the chains and leave behind apparently empty husks, *but it is still more customary to see the Bacteria fall to pieces, and then to globules, at first shut up in the Glia capsule* (*as Ascococcos*) *and afterwards free.* A third change is the appearance of darkly contoured fat-glistening drops at one end of the body of the bacterium, through which it assumes a nail-like appearance (Helobacteria), and does not further develop; besides this the appearance of colourless swellings and partial dilatations of one or of many links of a bacterium chain, and at last, especially after the addition of certain salts (nitrate of potash), appear sharp detachments of the weakly trembling chain. Billroth comes to the conclusion that all the already described forms belong to one vegetable species, the coccobacteria septica, especially because he succeeded in finding in long-preserved milk-serum coccos, ascococcos, and bacteria combined to form one vegetable

growth. A further development of the coccobac. sept. Billroth has never observed, even when by transplantation to fresh nourishment-material all possibility of exhaustion of the conditions of life could be avoided.

Completely dried Coccobacteria, in whatever stage of development, could not in a great many cases be restored to life by the addition of any fluid whatsoever—that is, could not be made capable of development. On the other hand, it was shown to be beyond doubt that in the atmosphere (of the laboratory in the Vienna hospital) germs of coccobact. sept. (*Dauersporen*) are present, which developed luxuriously in flesh-water kept for half an hour previously at a temperature of 200° C. These *Dauersporen* were able to bear water at the boiling and at the freezing point (although Billroth, on the following page, 33, states supplementarily that they can be annihilated by simple boiling). They can be thoroughly dried and then reconstruct themselves in a medium sufficiently rich in water into micrococcos, which surrounds itself with glia, and then develops itself again into chains, or through stretching of the individuals into bacteria.

Billroth (contrary to Karsten and J. Lüders) denies that there is a generic relationship of coccobacteria with penicillium, and the ferment of beer and fruit-juice, in so far as the one could be said to be produced by the other. As a rule, the elements of coccobacteria do not flourish where luxuriant yeast vegetation exists, only oidium lactis can flourish beside it.

Pericardial fluid taken 14—60 hours (in summer) after death showed itself in 113 out of 200 cadavera free from organisms; in the others bacteria of a moderate size and very large streptobacteria, and beside them sometimes also micrococcos were found; but the latter were only found in about a fourth of the cadavera. In two thirds of all cases in which organisms were found, acute diseases were the cause of death, only in one third chronic. By no process of cultivation was it possible to obtain from the larger oganisms (streptobacteria gigas pericardii) anything else than the disappearance of the plasma or the appearance of dark fat glistening globes inside it, which Billroth designates as "Dauersporen."

In the blood of the cadavera of human beings who had died of septic diseases (erysipelas, pyæmia, septicæmia) coccobacteria were by no means invariably found; also experiments on dogs, which had been killed in different ways, and had lain for different lengths of time in cooler or warmer temperatures, showed that the degree of corruption

must be considered to be the most important test for the presence of these organisms. Pus taken out of closed cavities in cadavera showed an equally varying state of things: in four cases in the cerebro-spinal fluid bacteria were only manifest in one, in which it was polluted by the blood of an already thoroughly putrefied cadaver. All vegetable forms immediately after being taken out of the cadaver were at rest, but made movements on the addition of water.

Many experiments with *infusions of the most diverse species of flesh and organs, with blood, and with lymph* (taken from a human fistula) *and pus,* demonstrated that the three last mentioned fluids took longer to putrefy than the former ones, and only develop the smaller forms of coccos and bacteria. From the many individual facts cited in the original, we bring into prominence that flesh-water in all degrees of putrefaction had an alkaline reaction even when it smelled sour or cheesy or of sulphuretted hydrogen. In milk and in sweet whey the bacteria flourished long after the period of turning sour—differing in many ways from those present in other fluids. Besides coccobacteria, oidium also became luxuriantly developed (see above), and later penicillium also. On the other hand, these two flourish well, as well as aspergillus in putrefying urine, in which coccobacteria, chiefly meso- and strepto bact., as well as micro- and meso-coccos, appear beside the chains. The "Torula urinæ" is the intermediary streptococcos.

All these organisms can for days and weeks long be found in urine, before it reacts in an alkaline manner. Sweat seems, according to one isolated experiment, to be no favorable soil for the development of coccobacteria, just as little the mixed saliva and fat from the human cadaver; on the other hand, the human bile seems more favorable. In fresh uncooked and also cooked white of egg, only a partial development of distorted forms were found; on the other hand, in an infusion of hard-boiled egg-yolk larger ones. Concerning the properties of certain exudations, see the original.

Experiments on the *pathological secretions of living human beings* showed that evil-smelling and rank pus from wounds contains chiefly micrococcos, the quantity of which stands in no proportion to the texture of the tissue; that bad smell and the prominence of micrococcos in pus do not of themselves necessitate fever; that in pus of completely closed-up abscess cavities vacuolated coccos forms can occur, and that such pus can stink without containing coccos; that individuals with closed-up suppurations can be in a state of high

fever without the pus or the inflamed tissue being putrid in the ordinary sense of the word, and without their containing vegetable forms. The sero-purulent contents of erysipelas pustules contained in five out of ten cases no elements of coccobacteria; on the other hand, the contents of the skin bullæ contained them twice out of thirteen times. In the secretions of gangrenous and diphtheritic ulcerations constant micrococcos and microbacteria were discovered as well as short detachments of them.

Culture-experiments on all organisms found in the above-mentioned circumstances gave always, according to the nature of the fostering soil, different forms of coccobacteria, but never such as distinguished themselves from the vegetable forms which occur in putrefaction outside the organism. This, and the similarity of the appearance of certain forms with those of organisms observed in different diseases, leads to the conclusion that as yet no morphological characteristics denote any micrococcos or bacteria formation, from which it can be decided that such can only be developed in a certain disease or in a living body.

If to boiled Pasteur's fluid (for composition see *Cbl.*, 1873, 116), or to Cohn's fluid (water 100, acetate of ammonia 1, magnes. sulph. and calcii chlorat. 0·03, and potass. phosph. 0.04), quantities from different putrefying fluids are added, and for several days kept at the temperature of the body, the vegetable formations of the coccobacteria mostly disappeared; at all events, there was no observable distinct further development, and new formations did not arise. Atmospheric contact seemed to be important for their thriving, so that frequently vegetation only formed on the fluid surfaces. Vegetations which disappeared in one mixture developed in another, and *vice versâ*. The most powerful in vitality seemed to be the vegetation formed by putrid urine and flesh-water. Fresh, normal, strongly acid urine, which had, without anything being added to it, remained acid for thirteen days, upon the addition of a very little putrid urine or as much putrid alkaline flesh-water, became alkaline in one day; on the contrary, after the addition of other putrid alkaline or sour fluids, not until after many days, and indeed weeks. Filtered hydrocele fluid was clear for a long or a short time, according to the nature of the fluid that was added. Just as different was the behaviour of urine, filtered hydrocele fluid, and pus, when dried putrid fluids or pathological secretions (with or without vegetation) on strips of linen were added. For instance, urine did not become alkaline until two days after the addition of dried, fresh, odour-

less pus, without vegetable forms, five days after that of putrid urine, and much longer after other substances that were added. On the whole, these and other experiments showed that the further development of coccobacteria from fluids and atmospheric air cannot take place under all circumstances, but is bound up with many and somewhat complicated conditions, and that the previous decompositions necessary to make fluids putrefy do not necessarily have any connection with the organisms, nor relationship with their development.

Turning to the production of coccobacteria among *living human beings*, Billroth next infers, that for its development it requires much water, and must stagnate on the substratum upon which the chemical changes are to act for some time under unchanging circumstances. These conditions are scarcely met with in healthy, and not always in sick people, with regard to parts of the body in direct communication with the outer world; for even from the parts sufficiently saturated with water, the germs are, as a rule, removed by the currents of air outwards or the flow of secretions. Wherever a stagnation takes place, as, for instance, in the mouth between the teeth (in normal circumstances at least), the living cellular action of the epithelium of the mucous membrane, and that of the underlying tissue, opposes the development of these elements. That germs can reach the blood-stream, for example, through the lungs, is not improbable, but they vegetate here no further, at least in a healthy condition, as has been shown by experiments on dogs with injection of putrid fluids (compare M. Wolff, *Cbl.*, 1874, 114, ff.). Thus, according to Billroth, observations on the production of bacteria in the blood of healthy or sick people can be called in question, and still less can these be considered as obviously connected with septic diseases; especially, Billroth found in the septicæmic and the pyæmic in the blood of the cadaver, when distinct putrefaction had not set in, only exceptionally micrococcen; much oftener in the pericardial serum (see above), where they could have penetrated from the intestine. Even in inflammation of the spleen the bacteria are as yet not pointed out with sufficient perspicuity as the only cause of the inflammation.

A certain *vital influence*, through which the development of putrefaction and of bacteria is hindered, must be attributed to many closed-up pus, serum, or blood collections, which remain for a long time in the body without decomposing. *The coccobacterian spores are not able to assimilate albumen in the form in which it is found in the living organism.*

Every kind of pus is not a favorable soil fo r micrococcos, but it is made so by a special kind of acute inflammation, namely, that of connective tissue (erysipelas, diphtheritic phlegmons), whereby, according to Billroth, a substance resembling a ferment ("phlogistisches zymoid") is added to the pus from the inflamed tissue. By means of this the pus is altered, the coccos flourishes luxuriantly in it, and it now brings about other alterations. The coccos does not require to come immediately from the air to reach the prepared pus, but can reach it through the juices of the body, in proof of which many observations can be cited. The pus of a wound or a cavity can also, through the inflammation of the surrounding tissue, be decomposed and fitted for the growth of coccos, being infected by other pus already decomposed and containing micrococcos. The phlogistic zymoid is formed by each acute inflammation in greater or less intensity and quantity, and spreads the process of inflammation to the tissues with which it comes in contact in a concentrated form.

To its presence, and not to that of micrococcos, the inflammatory effect of pus is due, which, at the same time, does not require to be decomposed, nor in any way to betray its infectious quality. As an example of peculiar specially infectious kinds of inflammation, Billroth selects *diphtheria*, as being characteristic of the deposit of a strongly fibrinous coagulating exudation in the tissues. The strongly infectious property of the secretion cannot be considered as a characteristic criterion, for every acute inflammation yields a secretion able to infect at a certain stage. In diphtheritic inflammation this stage lasts a long time, chiefly because the zymoid partly fixed in the coagulation is not set free until late; when the circulation becomes again free, it becomes eliminated with the suppurative softening and necrosis of the tissues.

[But this does not explain the *specific* action of the diphtheritic secretion—namely, its peculiarity of again producing *diphtherial* inflammation. The Abstractor (Senator) takes the liberty here of referring to his forthcoming essay on *Cynanche Contagiosa*, in Volkmann's Collection.]

Billroth, in accordance with his observations, cannot believe that the micrococcos which is found in diphtherial tissue is primary, and precedes the inflammatory changes. Further, the acceptance of a micrococcos, which lies at the foundation of the miasmatic and contagious qualities of diphtheria, has no special advantages. (Compare Senator, *Cbl.*, 1873, 75.) Just as little does it seem necessary to

consider micrococci in urinous diphtheria, in similarly described processes in wounds of the buccal cavity, designated by Billroth Muco-salivary Diphtheria, and in the phagedenic gangrene (hospital gangrene), as causes of the destruction of tissue. Billroth especially directs attention to the fact, that in all these deep fibrinous infiltrations by microscopic observation extensive micrococci vegetations can easily be simulated. In erysipelas, organisms are not invariably found in the blood and serum; the extension of these in certain anatomical directions (*Cbl.*, 1872, 241) is also explained by an unorganized inflammatory ferment; it is similar with *Lymphangitis*. In *Phlebitis* which has taken place after wounds and acute inflammation, and which almost always begins as periphlebitis, *Thrombosis* only appears under most favorable circumstances, for which the coccobacteria must not be made answerable.

As concerns the *putrid infection*, the fact that coccos vegetations cannot always be proved in the blood proves nothing by itself. Many experiments prove that infection is the consequence of a body working like a ferment; others again declare that the action is not brought about as in fermentations proper, by infinitely small quantities of the poison, but stands in direct relationship to the quantity of putrid fluid introduced. Billroth inclines to the idea that the putrid poison is directly applied to the organism in a way analogous to poisonous chemicals, and that it does not work by fermentation on the blood first, in order to produce the deleterious matter. It then works as the phlogistic zymoid in certain concentrations, produces phlegmons in many tissues and organs, and probably the chemical changes in the parenchyma of the acutely inflamed tissues are analogous to those in putrid tissues. If thence follows a certain etiological connection between fever caused by wounds, septicæmia, and pyæmia, nevertheless there are distinct *clinical* types belonging to each of these diseases, which differ from each other essentially, probably because the infection is not always regular—as, for example, in pyæmia—but occurs in separate attacks. The zymoid infectious substance can be fixed by coccobacteria, and can be carried further by them, but whether it can exist without them in fluids or dry matters cannot be determined.

In the last section Billroth busies himself with the changes which certain added substances produce on the development of coccobacteria, and with the therapeutic import of the anti-putrid substances. Sugar added to all kinds of animal secretions, and to the fluids of the tissues,

hindered the development of the bad smells caused by decomposition, and when plentifully added also impeded vegetative growth. *Carbonate of potash, sulphates of copper and iron, boracic acid, acetate of ammonia* (of each about 1 to 30 water), *Muller's fluid, liq. plumbi, carbolic acid* (1 to 10 and 20 water), *butyric acid* (4 drops to 1 ounce of flesh-water), and *lactic acid* (in the same manner, and added to 1 ounce of solution of sugar), equally well hinder the coccos development; whereas *diluted alcohol, chlorine water* (1 to 20 water), *chlorate of potash, common salt, saltpetre, carbonate of soda* and *carbonate of magnesia, chalk, sodium, sulphate of magnesia, phosphate of potash* and *soda, acetate of potash* (all these salts in the proportion of 1 to 30), finally *permanganate of potash* (1 to 48), only slightly or not all hindered the development. In already *commenced putrefaction* with rich coccos vegetation, the stink could be prevented by the plentiful addition of *sugar,* or of juices and fruits (figs) containing much sugar, probably because the sugar favours the development of yeast (chiefly oidium, which prevents that of coccobacteria. Milk, yeast, onions, radishes, had not this effect. Destruction of the bacteria and removal of the stench followed invariably when solutions of *carbolic acid* (1 ounce to 1 pound, with some alcohol added, to make the solution complete), *permanganate of potash* (1 to 24), *sublimate* (1 to 320), *chloride of gold* (1 to 200), *nitrate of silver* (1 to 24), *quinine* (1 to 48), extr. spir. *ligni campechiani* (1 to 24), or *tincture of iodine, liquor ferri sesquichlor., pyroligneous ether, wood vinegar, wine vinegar, liq. potas. caust., liq. ammon. caust., lactic acid, glycerine, aqua creosoti,* were mixed in equal parts with liquid putrefactive matter, whereas far greater quantities of *liq. plumbi, rectified alcohol, chlorine water* and *chloride of lime,* are necessary to obtain the same end.

In relation to therapeutics, Billroth discusses the conditions for the favorable and unfavorable progress of wounds; that is to say, of subcutaneous wounds, wounds produced by caustics, wounds hermetically sealed, and without dressings ("open-wound treatment"), by means of immersion and irrigation, and wounds in cavities. Further, of the purification and renewal of air, the disinfection of walls, utensils, and bandages, and, in short, of a great many more or less important antiseptic remedies.—*Edinburgh Medical Journal.*

CROTON CHLORAL.*

By Dr. R. Engel.

Notwithstanding that since Dr. Liebreich first brought croton chloral under the notice of the medical profession it has been the subject of numerous physiological experiments, very little is generally known of it, especially in a chemical point of view. The object of the author in this paper, therefore, has been to describe the preparation, and the chemical, physiological, and therapeutic properties of this substance, which is now prepared on a large scale in Berlin.

Constitution.—Ordinary chloral is an aldehyd; it is the hydride of trichloracetyl, C_2Cl_3O . H. Croton chloral is the hydride of trichlorocrotonyl, $C_4H_2C_3O$. H, or the aldehyd of crotonic acid, C_4H_5O . OH, in the radical of which three atoms of hydrogen have been replaced by three atoms of chlorine.

Preparation.—Krämer and Pinner† were the first to obtain croton chloral by passing a current of chlorine into aldehyd during twenty-four hours. The action is very energetic at the commencement of the operation, so that it is necessary to surround the vessel containing the aldehyd with a refrigerating mixture, and it is only towards the end that the temperature is raised to 100° C. During all the time of the action of the chlorine upon the aldehyd large quantities of hydrochloric acid are disengaged. The product obtained is submitted to fractional distillation, and a liquid is thus isolated passing over between 163° C. and 165° C., which is croton chloral.

Wurtz had previously studied the action of chlorine upon aldehyd,‡ and had indicated among other products of the reaction chloride of acetyl, and had shown that ordinary chloral is not produced; but the formation of croton chloral escaped him. The reason was that Wurtz caused chlorine in excess to act upon aldehyd, whilst Krämer and Pinner passed a current of chlorine into the aldehyd until it was no longer absorbed.

The production of croton chloral under these conditions is easily understood, since Kekulé has shown that acetic aldehyd, under the influence of various saline solutions, and more easily still under that of hydrochloric acid, is

* 'Journal de Pharmacie et de Chimie' [4], vol. xx, p. 278.
† 'Annalen d. Chemie und Pharmacie,' vol. clviii, p. 37.
‡ 'Ann. de Chim. et de Phys.' [3], vol. xlix, p. 48.

condensed, with the elimination of water, into croton aldehyd:

$$\underbrace{2\,C_2H_3O\,.\,H}_{\text{Aldehyd.}} = \underbrace{C_4H_5O\,.\,H}_{\text{Croton aldehyd.}} + \underbrace{H_2O}_{\text{Water.}}$$

Further, aldehyd, under the combined action of heat and a little hydrochloric acid, may even be combined with other aldehydes, with the elimination of water, and new compounds be thus engendered, which are themselves aldehyds.

In the action of chlorine upon acetic aldehyd a substitution is commenced in the latter, which results in the formation of hydrochloric acid. This acid determines, as has just been seen, the formation of croton aldehyd; upon which the substitutive action of the chlorine then goes on. The formation of croton chloral is thus readily explained.

Physical and chemical properties.—Anhydrous croton chloral is a colourless oleaginous liquid, having a peculiar odour, recalling that of ordinary chloral. It is insoluble in water, but, like ordinary chloral, it combines with water to form a crystallized hydrate. The hydrate of croton-chloral crystallizes in white nacreous spangles. It is slightly soluble in cold water, more freely soluble in warm water, and extremely soluble in alcohol (Krämer and Pinner). It dissolves more readily in glycerine than in water (J. Worms).

It is known that ordinary chloral is decomposed under the influence of caustic potash into chloroform and formiate of potassium:

$$\underbrace{C_2Cl_3O.H}_{\text{Chloral.}} + KOH = \underbrace{CHO.OK}_{\text{Formiate of potassium.}} + \underbrace{CHCl_2.Cl.}_{\text{Chloroform.}}$$

Under the same influence croton chloral breaks up into allyl-chloroform and formiate of potassium:

$$\underbrace{C_4H_2Cl_3O.H}_{\text{Croton chloral.}} + KOH = \underbrace{CHO.OK}_{\text{Formiate of potassium.}} + \underbrace{C_3H_3Cl_2.Cl.}_{\text{Allyl-chloroform.}}$$

But allyl-chloroform is excessively unstable, and decomposes rapidly into hydrochloric acid and bichlorallylene:

$$\underbrace{C_3H_3Cl_2.Cl}_{\text{Allyl-chloroform.}} = HCl + \underbrace{C_3H_3Cl_2}_{\text{Bichlorallylene.}}$$

Physiological and Therapeutic Properties.—According to

Liebreich,* croton chloral, administered internally, rapidly produces slumber similarly to ordinary chloral, but without its use being followed, as in the case of the latter, by lowering of the pulse and respiration. Even after the administration of very high doses of croton chloral the pulse is not reduced.

The author thinks that it is not to the first product of decomposition (ally-chloroform) that hypnotism is due. Allyll-chloroform, being very unstable, breaks up immediately, and he thinks therefore the action of croton chloral should be attributed to bichlorallylene. Moreover, Liebreich has found that bichlorallylene, when administered to animals, does not reduce the circulation or respiration. Comparing the effects of chloroform and chloral on the one hand, and bichloride of ethylene and bichlorallylene on the other, he considers himself justified in asserting that whilst the trichlorinated substances act upon the brain, spinal cord, and heart, the bichlorinated substances act only upon the brain and spinal cord. In none of his experiments has Liebreich recognised any hurtful effects on the stomach or any other organs; and he reports that he has employed it very successfully in cases of facial neuralgia, the pain ceasing frequently before sleep is produced. Jules Worms, however, asserts that croton chloral is not so generally tolerated as chloral, and Georges Gay says that its narcotic action is more uncertain.

Croton chloral is hypnotic in doses of from half to one gram. It may be administered in solution in water, or in glycerine. The following is the formula employed by Jules Worms:

Croton chloral	1 gram.
Glycerine	60 grams.
Water	60 „
Oil of peppermint	3 drops.
Simple syrup	25 grams.

In a paper contributed to the *American Practitioner* by Mr. Louis Diehl, of Louisville, he remarks that croton chloral hydrate differs from the ordinary chloral hydrate by its sparing solubility in cold water, and in the exceedingly irritant character of its vapour. Chloral hydrate, on the contrary, is freely soluble in water, and its odour when pure is not irritating. Nevertheless, nearly all commercial chloral hydrate has a more or less irritating odour, and it is inferred by Mr. Diehl that this is owing to the presence of croton chloral, formed either from aldehyd, contained as impurity in the alcohol, or from aldehyd generated by the action of

* See 'Pharm. Journ.' [3], vol. iv, p. 510.

chlorine. No experiments have, however, been made by him to prove the correctness of the inference.

Reporting upon a sample of croton chloral hydrate purchased in New York, the original source of which was unknown, he says, "It is a white, powdery substance, of a pearly lustre, apparently crystalline, and when triturated in a mortar has the appearance and feels to the touch like pulverized valerianate of zinc. Its odour reminds of ordinary chloral hydrate and iodoform; does not seem to be more pungent than that of ordinary commercial chloral hydrate, and not as much so as that of some samples I have noticed. Its taste is bitter and aromatic, recalling the odour of iodoform. It is more soluble in cold water than I should have expected from the characteristic, sparingly soluble, given it by its discoverers. Thirty minims of distilled water dissolve one grain readily. If another grain be added to this solution heat is required to dissolve it, and upon cooling and standing a short time a copious crop of well-defined crystals is obtained. Subsequent experiments proved it to be soluble in between twenty-two and a half and twenty-five parts of water, at a temperature of 60° F. In alcohol it was found to be freely soluble."

From these experiments it follows that croton chloral hydrate (commercial) may be dispensed in aqueous solution of a strength corresponding to two grains in the fl. drachm, and Mr. Diehl gives the following formula:

℞	Croton-chloral hydrate . .	g. viij.
	Warm water	fl. ℥j.
	Simple elixir	fl. ℥vij.

Ft. solut.

Owing to the alcohol contained in the simple elixir,* a larger quantity than two grains to the fl. drachm could, if desirable, be incorporated and held in solution by the above mixture.—*The Pharmaceutical Journal and Transactions.*

WEGNER ON THE NORMAL AND PATHOLOGICAL GROWTH OF THE LONG BONES.

In the *Archiv für Pathologische Anatomie und Physiologie*, part 1, 1874, Wegner defends the theories of John Hunter, Duhamel, Flourens, and others, from the attacks of Dr. J. Wolff. The first question which Dr. Wegner discusses is, Is

* See 'Pharm. Journ.' [3], vol. iv, p. 682.

there or is there not, in the developed tissue, an interstitial growth? He remarks that it must be well understood that the question refers exclusively to the fully formed osseons tissue. No one has directly even observed such an interstitial growth. Ruge's endeavours to demonstrate such a process by the aid of the microscope merely show that the osseous corpuscles differ somewhat as regards size and distance from each other, at different periods, but do not prove interstitial processes in the formed osseous tissue. A great difficulty in applying the apposition theory to the growth of the lower jaw, arose from the circumstance that too little weight was attached to Hunter's postulated absorption upon the surface of the bones, and because nothing was seen of the processes of resorption. At present we know, from Lieberkühn's experiments with madder, that at the anterior edge of the coronoid process a continual resorption takes place in the growing animal, which is strikingly proved by Humphry's ingenious experiments (*Transactions of the Cambridge Philosophical Society*, vol. xiv). Wegner found that the bones of dogs and rabbits fed for some time on phosphorus are best adapted for the purpose. The process of external resorption is best seen on the posterior surface of the lower end of the femur, where, in the rabbit, a resorption-surface is seen occupying the whole circumference immediately above the condyles.

Wegner repeated the well-known experiments of J. Hunter on eighty animals—dogs, rabbits, cats and fowls. Dogs and cats are less adapted for this purpose, as suppuration usually supervenes after the operation, and also because the osseous substance in young individuals is too soft to hold the nails. The first series of experiments consisted in driving, at measured distances, several nails into the middle portion of the diaphysis of the tibia or femur, in such a manner that their surface was at the same level as that of the bone. After some months, the animals were killed and the intervals between the nails again measured, when in not one instance had the intervals changed in a measurable degree. In some few instances, in fowls, the distance had increased, but it had also diminished in some, owing, no doubt, to pathological changes.

The whole series of arguments advanced as indirectly supporting the theory of interstitial growth were to refute at the same time the apposition theory. Dr. Wegner thinks that an interstitial expansion of the developed osseous tissue does not take place, but that the absorption-processes are everywhere visible and demonstrable; that the change in the

form of the lower jaw, the shifting of the bony projections, &c., are pathological formations (exostoses and pararticular callus) ; and finally, that the stability of the architecture of the bones is perfectly compatible with the apposition theory. Nothing can be indirectly advanced against it, and in favour of it the proofs are many and positive.

All the experiments, says the author, tend to show that the growth in length of the cylindrical bones proceeds from the epiphysial ends. In harmony with this are the results of feeding with phosphorus. Whilst during the feeding with madder the last-deposited layer appears red at the intermediary cartilage, it becomes dense and compact during the feeding with phosphorus, instead of spongy ; and if the phosphorus be omitted for a certain time, there immediately appears at the intermediate disc a layer of common spongy substance. If now the phosphorus feeding be recommenced, alternate layers of spongy and compact tissue will be found. Pathological observations also support the apposition and resorption theories, *e. g.* the interrupted growth after premature synostosis of the cranial sutures, &c. Dr. Wegner concludes a long paper, which is only the first part of his intended communication, by affirming that his numerous experiments bear out to the fullest extent the observations of all authors except Dr. Wolff, to the effect that the growth of long bones is effected by way of apposition and resorption, and that the interstitial interpretation of Dr. Wolff is entirely erroneous.—*The London Medical Record.*

THE EUCALYPTUS.

We find a great deal of information respecting the character and valuable properties of the Eucalyptus and its products in a paper read before the Melbourne Royal Society at its August meeting, by Mr. Bosisto. The lecturer especially discussed the question whether Eucalyptus was a fever-destroying tree.

He remarked that in many places on the Continent and elsewhere experiments had been made to acclimatise the Eucalypti, more especially the blue-gum species. The rapidity of its growth, its early maturity to a forest tree, together with the power to absorb considerable moisture, and to permeate the air with its peculiar odour, led to the belief that the tree, attractive in itself, exerted a beneficial influence upon malarious districts. In the consideration of the question whether

the Eucalypti tended to destroy miasmatic poison or to lessen malaria, it was necessary to take into account the whole of the Eucalypti vegetation. Four fifths of Australian vegetation consisted of the Eucalyptus. Australia, on the whole, might be said to be pretty free from violent endemic or miasmatic poisons, and concerning the latter they might be said to exist only as the Eucalyptus receded. The physical geography of Australia did not differ in general outline from that of other countries, but the vegetation of the Eucalypti was absolutely indigenous to Australia and Tasmania. Baron von Mueller described 130 species of this genus as existing in Australia. The physical properties of all Eucalypts were that they cast their bark and that their leaves were evergreen, with, in some species, translucent cells. The chemical contents of a Eucalyptus tree were neither poisonous nor virulent, and from the tree might be obtained a tannate gum resin, a volatile acid, and a volatile oil, peculiarly of Eucalyptic origin. The two first were found in most parts of the tree, but the latter only in the leaves. In those three constituents the key to the question was to be found. The first matter to consider was whether there was any proof that these volatile bodies were set free in the air by the forces of the plant in unison with atmospheric agencies, and if so, when did the process take place, what was the quantity, and what was the probable sanitary effect. He then proceeded to give a detailed account of his experiments in the extraction of Eucalyptus oil. The representative species were the manna gum, the odorata, the red gum, stringy bark, iron bark, blue gum, mallee, and peppermint. The mallee supplied an abundance of oil during the moist season, and the coast species during the summer months. In fact, as midwinter approached, the coast species were ebbing in volatile products, and the others were flowing. The evidence of oil evaporation might thus be stated—that the desert scrub gums, after a winter of average rainfall, supplied the air with a continuous and even quantity of aromatic vapour, and kept up a vigorous vitality throughout the summer, and that a short season of rain, and a long dry summer, diminished the formation of oil and so lessened the exhalation ; but, on the other hand, the species tending seaward increased their quantity after a short winter. The aroma of the volatile acid present in the Eucalyptus might be detected in the air, along with that of the oil, when travelling in the bush. The extent of the Eucalyptus vegetation in Victoria was given by Mr. Skene, in his report to the commissioners of the exhibition, as follows :—"The area of the whole colony was

55,644,000 acres, of which 5,560,000 acres was of dense mallee scrub; 6,225,000 acres of mountainous ranges, densely wooded with gums; and 38,922,000 acres of open timbered country." He calculated that mallee scrub would retain in the leaves, at one time, 4,843,872,000 gallons of oil, and the seaward species 280,891,000 gallons. The extent of mallee country in New South Wales and South Australia was estimated at 20 times the area in Victoria, and that would, calculated on the same basis, return 96,877,4400,000 gallons of oil, held at one and the same time in a belt of country massed together over which the hot winds traversed. Considering, also, that the same condition existed throughout the greater part of Australia with the other Eucalypts, he could not arrive at any other conclusion than that the whole atmosphere of Australia was more or less affected by the perpetual exhalation of these volatile bodies. From all that he could gather on the subject, he arrived at the conclusion that there was an active agency existing in Australian vegetation over that of other countries, and the exhalation from which gave to the atmosphere an invigorating and healthy tone. After examining all the evidence, he came to the conclusion that the Eucalyptus was a fever-destroying tree.—*The Chemist and Druggist.*

INSECT-EATING VEGETABLES.

It has been known for many years that certain plants entrapped and consumed insects, but Mrs. Mary Treat, New Jersey, has recently made some curious observations as to the nature of these carnivorous vegetables. The following account of her experiments is taken from the *Medico-Pharmaceutical Abstract and Review.*

"When an insect is entrapped a slimy secretion begins to ooze from the inside of the leaf, and in a day or two envelopes the insect's body. After a period of several days the insect disappears, with the exception, perhaps, of some hard parts, which are ejected, and the leaf reopens, if it is healthy, to receive another victim. Such being the *modus operandi* in general terms, Mrs. Treat proceeded to make more careful observations. She found that the leaves and plants differed greatly in their power of assimilation. Some leaves were unable to digest even a single fly, while others disposed of three successively, but never could manage a fourth. When a leaf has done its duty in contributing nutriment to the parent stem, it dies, and is replaced by another or others. The leaves

were not restricted to a uniform diet. Mrs. Treat tested them with beetles, spiders (of the daddy-long-legs variety), &c., and even sat for some two hours with her little finger in one of the leaves. This last experiment was unsatisfactory, as for some reason her nerves refused, much to her regret, to let her remain a prisoner long enough to be even partially digested. The leaf had, however, begun to exude its digestive fluid, as if it would have been quite pleased with a human victim had it been big enough. Beetles and other hard-winged insects were digested by some of the stronger leaves, the operation requiring in some cases as much as two weeks. The strongest plant in the collection caught in all forty insects between May and October, and digested most of them, but this was accomplished by successive sets or relays of leaves. Insects removed after two or three hours of confinement sometimes recovered, but if they were left long enough to become covered with the slimy secretion they always died, although in some cases the secretion was carefully washed off."

The leaves appear to possess the curious power of approaching and seizing an insect, when fastened within a short distance of them, and seem to imply some of that instinct or knowledge which we are in the habit of considering as belonging to animal life only. Professor Darwin has discovered that the secretion or digestive fluid "has an acid reaction like that of the gastric juice of animals," and is of the opinion that he can prove "the existence of nerve points in the bristles which border the edges of the leaves." It is suggestive also of a kind of reasoning power, that the leaves of some of these plants take no notice of the presence of dry mineral substances, and scarcely any of fruit. If this instinct really exist, it may also happen that plants are sensitive to pain, and that in plucking flowers we torture the plant. Will the Society for the Prevention of Cruelty to Animals take this matter into consideration at some future date?

PROFESSOR LASEGUE ON HOT BATHS.

In an article published in the *Archives Générales* for November, Professor Lasègue gives the results of the investigations he has been engaged in on the therapeutical uses of the hot bath. The following are the chief conclusions which he has arrived at:

Every hot bath should be of short duration—from twenty to thirty minutes at farthest. The temperature on entering

the bath should be lower than on quitting it, whatever extremes this may reach, and the increase of temperature should always be made gradually. A useful maximum is found to be at 48° Cent. (118·4° Fahr.), but more often 45° Cent. (113° Fahr.). It is easily borne, providing that the sensations produced by the vaporisation of the water on the portion of the body not immersed are avoided, and that the maximum degree be not maintained beyond eight or ten minutes. When personal surveillance cannot be exercised, the formula of the prescription for a bath should be as exactly constructed as for the prescription of any other medicine:— "Bath to last ——; initial temperature ——; final temperature ——; increase it by —— degrees every five minutes; repeat the bath every —— during —— weeks."

On leaving the bath the patient is replaced in his bed, and soon regains, not his true temperature, which has varied but little, but his apparent temperature. In general moderate sweating ensues, which should neither be encouraged nor arrested, leaving the patient in this point to himself.

M. Lasègue has tried after high temperatures (as 48°) the effect of cold applications, but he has found, contrary to what takes place after vapour baths, that these are neither useful nor agreeable. With regard to the therapeutical applications, he states that he has found this remedy of especial utility in chronic rheumatism which has produced deformities of the joints (*rheumatisme noueux*), and which usually resists all modes of treatment. After prolouged trials of medicated baths in such cases, he has come to the conclusion that when these are of use it is to the temperature that this is due.

"I may say that individuals the subjects of *rhumatisme noueux* (not having any complications which contra-indicate this mode of treatment) derive a real local and general comfort from the use of hot baths. The articular rigidity is diminished, the joints are less doughy, and the movements less painful. Patients condemned to their bed and inaction find themselves able to resume some sort of manual procedure, to get up, walk, go downstairs, &c., exercises which had seemed to be for ever prohibited. The treatment has the advantage of being easily employed and of being economical, and, in my eyes, it has the still greater merit of being indefinite in its duration, so that it can be left off and resumed according to the indications; and persistence in it does not diminish its efficacy. Whatever the results may be that have been attained, however, there must be no illusions entertained as to the curability of this redoubtable disease. There the

disease remains during the treatment in full evolution, and when you believe that you have realised a definitive benefit a new acute crisis, or a series of subacute attacks, compromises all. Discouraging as are these relapses, foreseen theoretically, but which we hope to escape, we must none the less persevere in whatever treatment we have adopted. I have endeavoured to ascertain how far hot baths, which do not, any more than other remedies, preserve from relapses, contribute to moderate the active crises. Tolerated even during the period of painful fluxion, they are really of no use except during the remissions, to say nothing of the almost insuperable difficulty of their application to patients to whom the slightest movement causes painful suffering. Without discussing the value of medicated baths, I believe myself authorised by a long experience to declare that no methodical employment of such baths will be of service in *rhumatisme noueux* unless the temperature is regarded as the first consideration."

In other forms of chronic rheumatism not so far advanced as these, although considerable deformity of the joints may have been produced, the action of the baths is much more decisive, especially when the affection is confined to a small number of joints. In such cases M. Lasègue has tried the comparative value of local and general hot baths, and he is decidedly of opinion that the former are of far less efficacy.

"The pains which persist without deformity of the joints, as a consequence of acute or subacute rheumatism—whether these are aroused at intervals only, or have remained continuous since the disappearance of the fever—are more easily modified by baths at a high temperature. Articular rigidity, which is so common and frequently so inconvenient, and which may remain for weeks or months without spontaneous pain or without any other suffering than that induced by the forced flexion of the joints, has no better remedy. Six or eight baths, repeated on alternate days, generally suffice. As a general rule, the employment of hot baths every day is of doubtful utility. The baths have not here, any more than in *rhumatisme noueux*, the privilege of preventing relapses. This is, in my opinion, one of the drawbacks of the bath treatment, internal remedies alone having the power of modifying the diasthetic condition of the subjects of rheumatism to a sufficient extent to bestow upon them a preventive value. . . . . Besides chronic rheumatism, which is especially favorable for their application, I have employed hot baths in various other pathological conditions; but I will content

myself with indicating abdominal affections, and especially certain forms of chronic diarrhœa. I have even had recourse to baths raised to 40° and above in cases which seemed at first sight in full contradiction to their useful employment—in patients suffering from obstinate chronic bronchitis. An announcement so vague as this can only be regarded as an appeal to future experience; but what I can affirm is, that I have never observed any mischievous influence, and that consequently further experiments may be tried without incurring the imaginary dangers that might be supposed. The question of the employment of hot baths in chronic broncho-pulmonary diseases is, moreover, of sufficient importance to deserve more than a mention. Lastly, I owe to Dr. Landrieux, my *chef de clinique*, the idea of a bolder application which has been crowned with success—that of the employment of hot baths in obstinate metrorrhagias, frequently arising from ill-determined causes, and supervening independently of all inflammatory antecedent or complication."—*Medical Times and Gazette.*

WILLIAMS ON THE ACTION OF BILE IN PROMOTING THE ABSORPTION OF FATS.

C. H. Williams ('Roylston Essay,' first prize, *Boston Medical and Surgical Journal*, May 7th) has made several experiments on this subject by ascertaining the pressures required to force oil through membranes when they were dry, when moistened with water, and when moistened with oil. He also employed thin plates of plaster of Paris instead of membranes in some of his experiments, as the pores in the plaster are rigid and cannot alter in shape. From these he arrives at the following conclusions: 1. The passage of neutral fats through capillary canals or pores is favoured by the presence of bile in those pores. 2. This action is increased when the bile is rendered alkaline, and diminished when it is acid. 3. The action cannot be due to the bile changing the form of the pores. 4. After passing through membranes moistened with bile, the fats appear more finely divided than with membranes wet with other substances, apparently showing that the drop-tension or cohesion of the fat has been affected.

TARKANOFF ON THE FUNCTION OF THE SPLEEN.

At the meeting of the Paris Society of Biology, on December 26, 1874, M. Tarkanoff communicated the result of a series of experiments undertaken to determine the function of the spleen, and to ascertain if it may be considered as helping in the formation of white corpuscles. This opinion has gained so strong a footing in physiology, that it has become an axiom since the labours of Vierordt and Funk, who, comparing the blood of the splenic artery with that of the vein, established that in the latter there was one white to every seventy red corpuscles. In the arterial blood, on the contrary, the proportion was normal. They thence concluded that the spleen was an organ forming white corpuscles, but they made their experiments upon dead animals. M. Tarkanoff, however, made his experiments on living animals; he performed section of the splenic nerves, when hyperæmia and swelling of the spleen ensued, and at the same time a veritable leucocythæmia. This experiment appeared to him to be in accordance with M. Vierordt's conclusions, since greater activity in the circulation of the liver brought on an increased production of white corpuscles; but at a subsequent period M. Tarkanoff found that a simple wound, without any section of the splenic nerves, would bring on a similar leucocythæmia; the excess of circulatory activity could not therefore any longer be taken into consideration. He therefore wished to investigate the exactness of Vierordt's and Funk's data, and made an exact reckoning of the white corpuscles of the splenic vein and artery on the living animal by M. Malassez's method; but he first felt it necessary to discover in what proportions these corpuscles were present in the arterial and venous systems. The results were so different that he could not arrive at any conclusion, but he invariably found that the white corpuscles were more numerous in the left than in the right side of the heart; and in one analysis alone he found that the left ventricle contained 2765 corpuscles, whilst the right contained only 1530. He also established a similar fact in the vessels of the spleen, which is in opposition to what writers have hitherto maintained. The proportion of white corpuscles is always more considerable in the arteries than in the veins; in one case he found 8900 in the artery, and only 9500 in the vein. He also ascertained that this increase of the corpuscles in the artery was larger in proportion as the circulation of the spleen became more active.

After dividing the splenic nerves he counted 10,000 white corpuscles in the artery, and only 4300 in the vein. M. Tarkanoff, therefore, concludes that in all instances the white corpuscles are less numerous in the spenic vein, and that this diminution becomes so much the more marked as the activity of the circulation is greater.—*London Medical Record.*

RELIABLE DISINFECTANTS.

The vast importance of an efficient disinfectant in times of scarlet fever, cholera, smallpox, and such infectious diseases, has lately attracted the attention of the scientific world, and a summary of the researches made by Professor Lebert, of Breslau, on the prophylactic treatment of cholera have been published in the *Medical Record.* He finds that chloride of lime is by no means suited to the purpose for which it is and has for many years been so extensively used. In fact, not only are its odours most unpleasant, but when used in quantities sufficient to have any disinfecting powers, they become even injurious. Green vitriol is also condemned as being more potent in disguising bad odours than in destroying the germination of parasites. Sulphurous acid may be used with good results in a diluted form of from two to four per cent., and can thus be used in enormous quantities at a slight cost, it being the cheapest of all disinfecting agents. Washing and bedding materials may be disinfected by first sprinkling them with the above diluted mixture, and by then subjecting them to fumes of sulphurous acid by burning sulphur in close rooms. The disinfectant recommended by the professor as being the most reliable and efficient for all purposes, and in all cases of infectious diseases, is carbolic acid. Its smell in houses, although at first disagreeable, soon ceases to be unpleasant, but the one objection to its general use is that it is more costly than other disinfectants; but as it is thoroughly efficacious, and as it is only expensive by comparison, it should be used wherever there are germs of infection or foul air. Water containing 2 per cent. of acid should be used for washing floors of rooms, and clothes should also be sprinkled with a like solution before being washed. Drains, &c., also should be well flooded, and the floors of rooms may have a slight sprinkling from a watering-pot with capital effect. The acid is best used in its pure state, unmixed with any of the substances so often recom-

mended. Clothing, bedding, &c., are disinfected most thoroughly by being just sprinkled with carbolic acid in diluted solution, and then macerated in boiling water, or by being subjected to a dry heat of 212° Fahr. in an oven, which plan is the best, in fact, the only one for purifying mattresses and such articles of clothing as cannot be boiled. All articles possessing no great value, such as straw mattresses, &c. should be burned to ashes. No better means of disinfecting water can be adopted than that of boiling it.

STUDIES ON BIOGENESIS.

By William Roberts, M.D., Manchester.

Philos. Trans. of Royal Society of London, vol. 164, p. 2. Read 16th April, 1874.

This paper is a valuable contribution to our knowledge of the origin of bacteria and torulæ. There are at present two rival theories regarding the origin of these minute organisms, namely, panspermism and abiogenesis. The first theory asserts that bacteria and torulæ are developed from pre-existing minute spores or germs; the second, that they may originate *de novo* under certain conditions. Dr. Roberts remarks that these two theories are not logically opposed. While the common mode of origin is from spores or germs, it is quite conceivable that abiogenesis may occur in some rare conditions. After an elaborate series of experiments, Dr. Roberts comes to the following conclusions as to the conditions under which organic mixtures and liquids are rendered barren by heat:—1. Organic mixtures and liquids are capable of being permanently sterilized by the heat of boiling water. Some are sterilized by an exposure to this heat for a few minutes, others require an exposure of twenty to forty minutes, and others an exposure of one, two, or several hours. A slight difference in the aggregation of the materials, or a slight difference in their reaction, was sufficient to alter very greatly the amount of heat required for their sterilization. 2. The degree of heat was compensatory to the duration of its application; that is, a longer exposure to a lower temperature was equivalent to a shorter exposure to a higher temperature. 3. Slightly alkaline liquids were always more difficult to sterilize than slightly acid ones. 4. No organic liquid or mixture, subjected for however short a time to the heat of boiling water, ever produced (provided there was no fresh infection) any fungoid or torulaceous organism. If germination took

place, the organisms were invariably bacteria. 5. Sterilization generally proved permanent if germination did not occur within four days. Sometimes germination took place on the sixth or eighth day, and very rarely ever as late as the tenth or twelfth day.

Dr. Roberts next proceeds to investigate the question of the capacity of the juices and tissues of animals and plants to generate bacteria and torulæ without extraneous infection. He experimented on egg albumen, blood, urine, blister serum, milk, grape juice, orange juice, tomato juice, turnip tissue and potato tissue. The materials of the experiment were enclosed in sterilized glass tubes or bulbs, which were plugged at one end with cotton-wool, and hermetically sealed at the other. They were then set aside in a warm place to see if they would germinate. The results were, that out of 90 such experiments, in 67 there was absolute sterility, while organisms appeared in 23. From these experiments Dr. Roberts draws the general conclusion that the normal tissues and juices have no inherent power to originate organisms, and that when organisms appear therein their development is due to germs imported from without. He then deals with cases in which bacteria make their appearance in liquids which have been subjected to a boiling heat. Bastian and Cohn aver from their experiments that the degree of vital resistance to heat of bacteria and their germs varies according to the nature of the liquid, and possibly also to the species of bacteria. Roberts shows that alkalized hay infusion will germinate after exposure to 212° F. for an hour, but sterilization is effected if the heat be continued for two hours. He also shows, by 21 experiments, arranged comparatively, that in ordinary air and water particles exist which, in certain liquids, are capable of germinating after exposure to 212° F. for five minutes. One of the most striking facts ascertained in these experiments is that, while unneutralized hay infusion becomes sterile after exposure for five minutes to a boiling heat, if a little ammonia or potash be added, so as to render it slightly alkaline, it may be boiled for one hour, and still be capable of germination. How does the alkali act in this case? Does it increase the vital resistance of the germs to heat, or does it increase "the abiogenic aptitude" of the infusion? This question was answered by ten very ingenious experiments. Ten flasks were charged with unneutralized hay infusion, boiled over a flame for five minutes, and plugged with cotton-wool. At the end of a fortnight no germination had occurred. Ammonia gas was then permitted to pass through the cotton-wool in five of the flasks, while liquor

potassæ was introduced into the fluid in the other five by breaking a small hermetically sealed tube containing this fluid which had been introduced into these five flasks at the commencement of the experiment. In all the ten flasks the fluid was now akaline, but no air had been admitted. They remained sterile, proving that the presence of alkali did not lead to germination, although the flasks had been boiled for only five minutes. When the flasks were unplugged, and air or water admitted, germination occurred in every instance in a few days. It appears, therefore, that the appearance of akali in these fluids increases in some unexplained way the vital resistance of bacteria to heat. In conclusion, Dr. Roberts says—"Nevertheless, I cannot withstand the impression that this general and common mode of origin (panspermism) may, under rare conditions, be supplemented by another and an abiogenic mode of origin." After numerous experiments made in 1869, 1870, and 1871, the reporter came to the same opinion. With our present knowledge, it is unphilosophical to assert that abiogenesis never occurs. These researches of Dr. Roberts are of the highest importance at the present time, when the rôle played by these little organisms in disease is beginning to be recognised.—*Edin. Med. Journ.*

ETZINGER ON THE DIGESTIBILITY OF GELATINE-YIELDING TISSUES.

J. Etzinger (*Zeitschrift für Biologie*, 1874, Band x, abstract in *Centralblatt für die Medicin. Wissenschaften*, No. 45, 1874) tested on the one hand the action of artificial gastric juice on the ligamentum nuchæ, tendon, cartilage and bone; and on the other hand fed a dog, whose excretion of nitrogen was diminished to a constant low value by being allowed to hunger for several days, with the proper substances.

The increase in the quantity of nitrogen after the supply of the above substances is taken as the standard for their utilisation in the body.

1. *Bones.*—Bone-powder, prepared by rasping the compact substance of ox-bones, dissolved tolerably richly in hydrochloric acid (0·3 per cent.). After ten days' digestion of 10 grammes (150 grains) of the powder, with in all 1200 cubic centimètres (rather more than 40 ounces) of dilute acid, only 1.83 grammes remained undissolved. The residue was richer in organic substance than the original substance,

organic substance, however, being plentiful in the solution. The dog experimented on showed, after taking 150 grammes of bone, an increase in the excretion of urea of about 8 grammes *per diem*. An absorption of lime from the bones could not be proved; on the contrary, the quantity of this mineral in the urine showed a diminution. The author supposes that the cause of this phenomenon lay in the diminished decomposition of the tissues of the body through the supply of gelatine. The phosphoric acid showed a small increase. Corresponding to this, the fæces evacuated during feeding with bones contained 308·5 grammes of ash, *i.e.* somewhat more than the supplied bones.

2. *Cartilage.*—Costal cartilage of a calf dissolved in not inconsiderable quantity in a 0·3 per cent. solution of hydrochloric acid (*e.g.* 24·3 per cent.); but much more on the addition of pepsin (74·9 per cent.). After feeding with cartilage, the fæces only contained traces thereof; the excretion of urea showed an increase of about 11 grammes after feeding with 72·2 of dry cartilage at 100° Cent.

3. *Tendons* were affected little by the action of a 0·3 per cent. solution of hydrochloric acid. After eight days' digestion the amount dissolved in the pepsin mixture was 12·05 per cent.; on the contrary, after three days they were broken up and dissolved, and 94 per cent. had gone into solution. The solution did not form a jelly after neutralisation and evaporation. The ligamentum nuchæ of an ox conducted itself similarly; on digestion for ten days it disappeared completely, only an unimportant residue remaining. The dog, after hungering for several days, received in one day 367·1 grammes of tendon, on the next 360·3 grammes, corresponding to 245·8 grammes of the dried substance. In the fæces only a very minute quantity of tendon could be found. The excretion of nitrogen in the urine rose to 21·2 grammes (the tendon contained 46·4 grammes).

All gelatine-yielding tissues are therefore capable of digestion and utilisation; most extensively tendon, then cartilage, and lastly bone, of which less organic substance is absorbed, probably on account of its rapid passage through the intestinal canal. The author confirms the results of Frerichs and Kühne, that gelatine, by digestion with pepsin and hydrochloric acid, loses its property of gelatinising.—*London Medical Record.*

ROYAL COLLEGE OF VETERINARY SURGEONS.

ANNUAL MEETING, HELD MAY 3RD, 1875.

THE thirty-second annual meeting of the members politic and corporate of the Royal College of Veterinary Surgeons, was held by advertisement, and in accordance with the provisions of the Charter, on the first Monday in the month of May, being the 3rd day thereof, 1875, at the College, 10, Red Lion Square, Holborn, London.

E. C. Dray, Esq., President, in the Chair.

Present.—The President, E. C. Dray, Esq.; Professors Pritchard, Branford, and Assistant-Professor Axe; Colonel Sir F. Fitzwygram, Bart; Messrs. Hartley T. Batt, I. D. Barford, G. Bailey, W. T. Bontoft, J. C. Broad, Alfred Broad, G. H. Brown, M. Clarke, Wm. Cooper, Joseph Davies, Henry Dawson, J. W. Evans, Wm. Field, Jun., George Fleming, T. W. Gowing, T. W. Gowing, Jun., Thomas Greaves, John Kell Haire, W. A. Harber, M. J. Harpley, Wm. Helmore, R. L. Hunt, Wm. Hunting, J. T. King, Clement Lowe, Joseph Mackinder, James Moon, Jas. Moore, Jas. Moore, Jun., Thomas Moore, John W. T. Moore, M. E. Naylor, J. Oliphant, Alfred J. Owles, Harry D. Pritchard, Henry Priestman, Samuel Rayment, John Reynolds, Jas. Rowe, Jas. Rowe, Jun., Frederick Samson, Henry K. Shaw, Mark Tailby, Thomas W. Talbott, Daniel H. Tombs, S. H. Withers, Jos. Woodger, Edward Woodger, Joseph Woodger, jun., F. W. Wragg, and the Secretary.

The Secretary read the notice convening the meeting.

The Minutes of the last general meeting were read and confirmed.

The Secretary then read the Annual Report.

REPORT.

AT the Annual General Meeting, which was held May 4th, 1874, in accordance with the provisions of the Charter, the following gentlemen were elected members of the Council in the place of those who retire by rotation, viz.:—W. H. Coates, T. W. Gowing, John Wilkinson, John Roalfe Cox, Colonel Sir F. Fitzwygram, and William Field, jun.

The Council of the Royal College of Veterinary Surgeons have to report that at their first Meeting, held June 2nd, E. C. Dray, Esq., of Wandsworth, was elected President, and the following gentlemen were elected Vice-Presidents :—Professor McCall, Messrs. Withers, Naylor, Mayer, Cheese-

man, and H. J. Cartwright; Treasurer, Mr. S. H. Withers; and Secretary, Mr. W. H. Coates.

The most important subject to which the Council of the Royal College of Veterinary Surgeons have had their attention directed since the last Annual General Meeting has been the application made by the Governors of the Royal Veterinary College for a Charter of Incorporation to that Institution.

Several meetings of the Council and Committees have been convened during the past year in reference to this subject, and more especially to the object for which the application was made. Having obtained a copy of the proposed Charter, some doubts were expressed by certain Members of Council whether there was not an infringement in some of its clauses upon the interests of the Royal College of Veterinary Surgeons.

In order to avert an unnecessary cause for alarm, the proposed Charter was submitted to the Parliamentary agents for their consideration, when the following reply was received:

8, Great George Street, Westminster;
November 7th, 1874.

Dear Sir,—We have carefully perused the draft Charter of Incorporation of the Royal Veterinary College which you left with us, and also the Charter of the Royal College of Veterinary Surgeons.

It does not appear to us that the Charter for which the Royal Veterinary College are applying will, should they obtain it, infringe in any manner on the powers or privileges secured to the Royal College of Veterinary Surgeons by their Charter. We would only point out an apparent discrepancy between the recital at p. 4 of the Draft, where it is said that it would be of advantage to those educated at the Royal Veterinary College, "and who have obtained the diploma of the Royal College of Veterinary Surgeons," &c., that they should be created and known as Fellows of the Royal Veterinary College, &c.; and the operative part of the Charter (p. 10 of the Draft), where, in dealing with the same subject, the words which we have put in inverted commas do not appear. We do not know, however, that this is a matter of any consequence. We do not think that any danger or difficulty can arise from the proposed power to enact bye-laws, as, independently of the general rule which limits the power of making bye-laws to the subject-matter of the instrument of which it forms a part, restrictive words are proposed expressly to be added to the power, as appears

at p. 11 of the Draft, namely, "so that they (the bye-laws) conform with the tenor of these our Letters Patent for carrying out the objects of the Royal Veterinary College."

Yours faithfully,

(Signed) Loch & Maclaurin.

W. H. Coates, Esq., Secretary.

A letter also bearing on this question, addressed to the President from Professor Simonds, expressing his views on the subject, was laid before a Special Meeting, held November 26th:

Royal Veterinary College,
Great College Street, Camden Town, N.W.,
London; *Nov. 25th*, 1874.

Dear Mr. President,—As I am prevented from attending the meeting of the Council of the Royal College of Veterinary Surgeons to-morrow by a previous engagement which I cannot postpone, I have thought it right to state to you in a few words the objects which the Governors of the Royal Veterinary College seek to obtain by a Charter of Incorporation.

These objects, as you will see, are two: first, a better security for their present large and increasing property; and, secondly, the elevation of their students whilst at the College, and when they afterwards distinguish themselves as members of the profession.

In preparing the Charter the Governors have never lost sight of the distinction which exists between a collegiate teaching body and the University which you represent; and they have strictly confined their powers to the promotion of the objects of their school, leaving it to your body to grant degrees as only a University should when in possession of the necessary legal powers to enable it to do so.

You are doubtless aware that the Royal College of Veterinary Surgeons must obtain a supplementary Charter before it can confer any degree beyond that of mere membership, and that this is a matter which strictly pertains to your corporate body.

I may add that the Governors are asking for no more in the bestowing of honours than they have power to do without a Charter, but that in granting these they wish for the additional distinction which a Royal Charter will confer.

I am, Mr. President,

Yours very truly,

(Signed) Jas. B. Simonds.

Edw. Coleman Dray, Esq.,
President of the Royal College of Veterinary Surgeons.

The Draft Charter having been read and submitted to the Council, together with the opinions above alluded to, some comments were made in reference to Clauses 13 and 17, and very lengthy discussions took place, especially in reference to teaching schools being allowed to grant degrees and certificates of distinction. The Royal College of Veterinary Surgeons, representing as it does the University of the profession, claims this right to itself, and that hereafter, if not now, powers might be usurped by the schools which were not the original intention of the present promoters of this Charter.

The Council, feeling they were responsible to the body corporate for anything which might have a tendency in usurping their functions, decided upon obtaining a counsel's opinion. A letter was addressed to the President of the Privy Council, "praying that he would not advise Her Majesty to grant the Charter of Incorporation applied for by the Governors of the Royal Veterinary College until the Council of the Royal College of Veterinary Surgeons had an opportunity of consulting counsel, so as to satisfy them that the said Charter does not infringe upon the rights and privileges of the Royal College of Veterinary Surgeons."

This letter having been acknowledged,

Messrs. Loch and Maclaurin, Parliamentary agents, prepared a case for counsel's opinion, and a conference was held at Mr. Cotton, Q.C's., Chambers, Lincoln's Inn Fields, on December 11th.

Mr. Cotton, after looking over the proposed Charter of Incorporation to the Royal Veterinary College, gave the following opinion :

1.—I am of opinion that neither the 13th clause nor any other part of the proposed Charter directly infringes upon any rights or privileges secured to the Royal College of Veterinary Surgeons by their Charter.

2.—I am of opinion that under Clause 13 the Royal Veterinary College would be at liberty to grant the honours therein mentioned to persons who have not obtained the diploma of the Royal College of Veterinary Surgeons, and that this might induce the public to consider persons who had not passed the examination required by the last-named College as duly qualified to practise as Veterinary Surgeons. This appears not to be intended by those who are

applying for the Charter, and I think they should be applied to, to consent to the amendment of Clauses 13 and 17 as altered by me. If they will not assent, I think that the Royal College of Veterinary Surgeons should represent to the Privy Council the importance of not allowing persons to practise as Veterinary Surgeons without some test of their being qualified; and that if the Charter is granted in the terms proposed the title of Fellows and Licentiates may be granted to persons who have not passed the examination required by the Royal College of Veterinary Surgeons, and that the public will thus be induced to believe that persons who have not satisfied the test required by the Charter of 1844 are duly qualified to act as Veterinary Surgeons, and to ask that the Charter be not granted unless Clauses 13 and 17 are amended as suggested.

(Signed) HENRY COTTON.

Dec. 12*th*, 1874.

The following are the original clauses, with the amendments proposed by Mr. Cotton :

13.—We further declare that the number of the subscribers of the said body politic and corporate shall be indefinite, with such individual privileges and subject to such conditions as shall appertain respectively unto each by virtue of these presents or by virtue of any bye-laws to be made as hereinafter appearing under the authority of these presents; and we declare that the Governors shall be empowered to confer upon and grant to such of the students of the said College as they shall think fit, annual or other exhibitions, scholarships, medals and other prizes, and certificates of distinction, and shall be at liberty to appoint* such Fellows Licentiates and Honorary and Foreign Associates of the said Royal Veterinary College as they may think proper, with such privileges and subject to such conditions as shall appertain to them respectively by virtue of any such bye-laws as aforesaid.

* *Amendment.*—Clause 13, page 10—"and also shall be at liberty to appoint *any persons who have obtained the diploma of the Royal College of Veterinary Surgeons such Fellows and Licentiates of the*

said Royal Veterinary College, and also to appoint such Honorary and Foreign Associates of the last-mentioned College as they may think proper, with such privileges and subject to such conditions as shall appertain to them respectively by virtue of any such bye-laws as aforesaid."

17.—And we do will and declare that such President, Vice-Presidents, Governors, and Treasurer, shall have power from time to time to enact such bye-laws as they shall think desirable, so that they conform with the tenor of these our Letters Patent for carrying out the objects of the said Royal Veterinary College. But we do hereby expressly declare it to be our royal will and pleasure, that no bye-laws shall be made by virtue of this our Charter in opposition to its general scope, true intent, and meaning.* And further we do hereby declare that no bye-law shall be of any validity excepting the same shall have been first approved of in writing by the Lord President of our Council for the time being.

* *Amendment.*— Clause 17, page 12 — " true intent and meaning, *or so as to prejudice or to interfere with the rights and privileges granted by our said Charter to the Royal College of Veterinary Surgeons.*"

Acting upon the suggestions of counsel the following letter was addressed to the Governors of the Royal Veterinary College :

ROYAL COLLEGE OF VETERINARY SURGEONS,
10, RED LION SQUARE, W.C.;
January 7th, 1875.

To the Governors of the Royal Veterinary College.

MY LORDS AND GENTLEMEN,—It having recently come to the knowledge of the Royal College of Veterinary Surgeons that you have applied to the Government for a Charter of Incorporation (with a view to hold land, and in general to benefit your College), they obtained a copy of the proposed Charter, and it is feared that by Clause 13 you would (if the Charter be granted) have power to confer degrees and make licentiates without your students having previously obtained the diploma of this College, the Council of the Royal College of Veterinary Surgeons, feeling that they are responsible to the body corporate that no infringement of

their rights and privileges should occur, have obtained counsel's opinion on your proposed Charter.

The result of that opinion leads them to believe that should the Charter you now seek be granted their functions as a University would be materially interrupted.

The Council, however, feel confident that it cannot be your intention to clash with them, or in any way to interfere with the provisions of their Charter obtained in 1844, and which has proved so beneficial to the public.

They therefore beg to express the hope that you, the Governors of the Royal Veterinary College, will take the subject of this letter into consideration, that the amendments suggested may be sanctioned.

Appended is a copy of the clauses that the Council of the Royal College of Veterinary Surgeons wish to have considered with their counsel's suggested alteration.

I have the honour to be, &c.

(Signed) Ed. Coleman Dray,
President.

The Governors of the Royal Veterinary College at their first meeting held January 12th, 1875, sent the following reply:

Royal Veterinary College, Camden Town, N.W.,
London; *January* 13*th*, 1875.

Dear Mr. President,—I have the honour to forward you a copy of a resolution which was passed at a meeting of the Governors of the Royal Veterinary College held yesterday having reference to some verbal alterations named in your letter of January 7th, which the Council of the Royal College of Veterinary Surgeons is desirous of having made in Clauses 13 and 17 of the Draft Charter of this Institution.

I am, dear Mr. President, &c.,

(Signed) Jas. B. Simonds.

To E. C. Dray, Esq.,
President of the Royal College of Veterinary Surgeons.

Resolution moved by J. W. Bosanquet, Esq., Treasurer, seconded by Sir Paul Hunter, Bart.; carried unanimously,—

"That the Governors have considered the alterations of the Draft Charter proposed in the letter of the President of the Royal College of Veterinary Surgeons dated the 7th of January, 1875, and entertain no objection to the insertion of these alterations.

"C. N. Newdegate, Esq., M.P., in the Chair."

It was stated by Professor Simonds at a meeting of the

Council, that the Governors of the Royal Veterinary College had never hesitated to pass the resolution, and as a body of gentlemen had never thought of doing anything which would interfere with the rights and privileges of the Royal College of Veterinary Surgeons.

The Council considered it was their duty as representatives of the body corporate to take the whole matter into consideration. It was questioned by some whether the proposed Charter would elevate the profession, as doubtless similar Charters would be applied for by other veterinary schools. It was thought advisable as much as possible to follow the example of the medical profession, and prevent schools from conferring degrees and making licentiates.

The Council received strong letters and protests from the Principals of the Scottish Veterinary Schools against the granting of degrees to any teaching College; that this power should only be vested in the Royal College of Veterinary Surgeons, and that a supplementary Charter should be obtained for this purpose.

After the alterations had been agreed to be made in the Draft Charter of Incorporation, the Parliamentary agents informed the Council, February 4th, that they had received a communication from the solicitors of the Royal Veterinary College enclosing a copy of the following letter:

COUNCIL OFFICE;
2nd February, 1875.

GENTLEMEN,—I am desired by the Lord President of the Council to inform you that the Lords of the Council are advised that the words inserted by Messrs. Loch and Maclaurin in pages 10 and 12 of the draft of the proposed Charter of the Royal Veterinary College are unnecessary.

Under these circumstances their Lordships are not prepared to submit the Draft Charter for Her Majesty's approval, without the omission of the words in question.

The draft Charter is herewith returned to you.

I am, &c.,
(Signed) E. HARRISON.

Messrs. Wilkinson and Son.

The Parliamentary agents having obtained an interview with some of the officials at the Council Office, were informed that it was open to the Royal College of Veterinary Surgeons to write to the Council, and state reasons why they differ from the views contained in the above letter.

Messrs. Loch and Maclaurin drafted the following letter to the Clerk of the Council, which was submitted and approved at a Committee meeting held February 5th:

8, Great George Street, Westminster, S.W.;
6th February, 1875.

Proposed Charter of the Royal Veterinary College.

Sir,—We have received from Messrs. Wilkinson and Son, the solicitors of the Royal Veterinary College, a copy of the communication made to them by the Clerk of the Council dated the 2nd instant, on this subject.

With sincere deference to the advice tendered to the Lords of the Council, we venture to offer the following remarks for their Lordships' consideration:

The Royal College of Veterinary Surgeons, founded in 1844, is, as you are aware, a purely examining body. Their function is to examine students who shall have been educated at any teaching school or college which may be established in the United Kingdom and affiliated with the Royal College of Veterinary Surgeons, they alone having the power to regulate the nature and extent of such examinations, and the appointment of persons to examine and determine upon the fitness and qualifications of the students.

The Royal College of Veterinary Surgeons deem it to be of the utmost importance to the profession, and consequently to the public, that their position as the only examining body should be preserved. If either directly or indirectly other examining bodies are admitted into the field it would be impossible to keep up the standard of qualification which is at present maintained by the central and national institution, and the Royal College of Veterinary Surgeons would lose its position as a University.

The Council, as the legal representative of the veterinary profession, have no wish and indeed no right to put any obstruction in the way of the Royal Veterinary College obtaining such a Charter as may, in their opinion, render their property more secure and strengthen their position, and by so doing rendering themselves more efficient as a teaching body or school.

But, as we have said, the original terms of their Charter appeared to raise a reasonable doubt whether they might not have the power, though no such intention can be imputed to the present Governors of that body, to infringe upon the rights and privileges of the Royal College of Veterinary Surgeons secured to them by their Charter.

They considered this matter so very serious that they thought it right to consult counsel on the subject, and consequently laid a case before Mr. Cotton, Q.C., placing the

documents in full before him, and stating simply facts from which he might draw his own conclusions.

His opinion is in the following terms:

"1.—I am of opinion that neither the 13th Clause "nor any other part of the proposed Charter directly "infringes upon any rights or privileges secured to "the Royal College of Veterinary Surgeons by their "Charter.

"2.—I am of opinion that under Clause 13 the Royal "Veterinary College would be at liberty to grant the "honours therein mentioned to persons who have not "obtained the diploma of the Royal College of Vete- "rinary Surgeons, and that this might induce the public "to consider persons who had not passed the exami- "nation required by the last-named College as duly "qualified to practise as Veterinary Surgeons. This "appears not to be intended by those who are applying "for the Charter, and I think that they should be "applied to, to consent to the amendment of Clauses "13 and 17, as altered by me. If they will not assent "I think that the Royal College of Veterinary Sur- "geons should represent to the Privy Council the "importance of not allowing persons to practise as "Veterinary Surgeons without some test of their being "qualified, and that if the Charter is granted in the "terms proposed the title of 'Fellows' and 'Licen- "tiates' may be granted to persons who have not "passed the examination required by the Royal College "of Veterinary Surgeons, and that the public will thus "be induced to believe that persons who have not satis- "fied the test required by the Charter of 1844, are duly "qualified to act as Veterinary Surgeons; and to ask "that the Charter be not granted unless Clauses 13 and "17 are amended as suggested."

(Signed) "HENRY COTTON."

The alterations alluded to by Mr. Cotton are those referred to in your letter of the 2nd instant.

The danger is not, in the opinion of the Royal College of Veterinary Surgeons, *theoretical* or fanciful, but real and practical, and they would respectfully and earnestly submit that the words which were proposed to be inserted in the Draft Charter in their behalf should be adopted.

We would add and beg to direct your particular attention to the fact that the words which the Royal College of Veterinary Surgeons are desirous should be added to the

Charter were formally considered and unanimously approved by the Governors of the Royal Veterinary College at a meeting held by that body in January last.

We have the honour to be, &c.,

(Signed) Loch & Maclaurin.

The subject of the Charter having remained in abeyance, several members of Council being anxious to know the result of the Parliamentary agent's letter, private information was supplied that the wishes of the Royal College of Veterinary Surgeons were complied with, and further that the Attorney-General had stated that had he known the merits of the case he should not have objected to the words being inserted in the Charter of Incorporation.

Meanwhile the following letter dated March 18th, from Professor Simonds, was addressed to the President:

Dear Mr. President,—The interest which has been manifested by the Council of the Royal College of Veterinary Surgeons and yourself in the incorporation of the Royal Veterinary College requires that I should officially inform you that Her Majesty the Queen has been graciously pleased to grant her Royal Charter of Incorporation of the Institution. I am, dear Mr. President,

(Signed) Jas. B. Simonds.

E. C. Dray, Esq.,
President of the Royal College of Veterinary Surgeons.

During the past year several letters have been received from members of the profession desiring to be informed whether they were exempt from serving on juries, to which negative replies were sent.

The Juries Bill, to which so much interest has been attached, is still before Parliament. Mr. Lopes, M.P., who has charge of the Bill, in reply to a question on the subject, stated that it was not his intention to re-introduce it this Session, as the causes (which are purely financial) still exist which prevented it from passing last year.

Mr. Harpley, who takes an especial interest in this subject, assures the Council that there is every reasonable hope that our object will be ultimately obtained.

The Council have the satisfaction to announce that they have been enabled to enter upon an agreement for a three years' lease of the College, and a further extension of time, if necessary, at a rental of £100 per annum on similar terms to the original one, the above having been submitted to the College solicitor for approval. The first quarter commenced from Christmas last.

In the meanwhile the Council hope that through the liberality of subscribers to the College Fund they may ultimately obtain such a building as will more befit the profession, and meet the increasing requirements of the Royal College of Veterinary Surgeons.

The College Fund.—The College Fund Committee have been very assiduous in endeavouring to promote an interest in this most desirable object.

Circulars have been issued during the past year to those members of the profession who had not hitherto subscribed, and although the response has not been so satisfactory as could have been desired, the Committee are sanguine that liberal subscriptions will yet be forthcoming. Circulars will shortly be issued afresh, when it is hoped that more of our provincial members will be stimulated by the example already set them, and that in the ensuing year many additional subscribers will be added to the list.

The Committee have the satisfaction to announce that they have invested in Government securities the sum of £1100 in the names of three trustees.

The following is the financial statement of this account:

Amount of Stock standing in the names of the three Trustees	£1,182	15	10
Subscriptions promised	53	12	0
Balance at Bankers'	58	19	7
Total	1,295	7	5

The list of subscribers is annexed.

The following is a statement of the attendance of members at the Council meetings held during the year 1874-5:

Vice-Presidents.

Samuel H. Withers	4	Thomas W. Mayer	3
James McCall	5	John Jas. Cheeseman	6
Martin E. Naylor	0	Henry J. Cartwright	3

Council.

Wm. Henry Coates	8	William Williams	1
Thomas W. Gowing	4	George Fleming	4
John Wilkinson	0	William Pritchard	2
John Roalfe Cox	3	Thomas Greaves	3
Col. Sir F. Fitzwygram	4	Robert L. Hunt	1
William Field, jun.	8	George T. Brown	0
Matthew J. Harpley	8	James B. Simonds	3
Richard Pritchard	4	James Moon	4
John Wortley Axe	3	James C. Broad	4
Benjamin Cartledge	2	Thomas Burrell	1
Joseph Woodger, jun.	6	Edward C. Dray	5
James Moore	8	George Balls	5

With regard to the examinations held during the past year, the only change effected has been at the Examining Board of the Scottish section of the Court of Examiners, where, in consequence of the failing health of one of its members, Mr. Chas. Tennant was reluctantly compelled to tender his resignation. The vacancy has been filled by the election of Mr. Henry E. Wilkinson, of Newcastle-on-Tyne.

The Council have to report that since the last Annual Meeting sixty-five students from the different veterinary schools have received the diploma of the Royal College of Veterinary Surgeons. The Council beg to draw attention to the very liberal and handsome offer made by Col. Sir F. Fitzwygram, which, it is hoped, will act as a stimulus to the students of the several veterinary schools.

He proposes to give to the Council of the Royal College of Veterinary Surgeons the sum of £105 annually to be distributed in prizes not exceeding three in number, and divided as follows :—First prize, 50 guineas ; second prize, 30 guineas ; and third prize, 20 guineas, to be competed for in the early part of each year. The prizes are open to all who have been students of any recognised Veterinary College during the session immediately preceding the examination.

The Registrar has to report the death of thirty-three members of the profession since the last Annual Meeting. One most regretted by the Council and the profession is Mr. Henry Lepper, of Aylesbury. He was elected a Vice-President in 1853, and a member of Council in 1854, and for seventeen years ably assisted in the examinations at the cattle pathology table.

The Annual Register of the Royal College of Veterinary Surgeons has been published, and is issued gratuitously to members of the profession on application to the Secretary.

Presentations have been made to the Library of the College by Dr. A. Voelcker and Geo. Fleming, Esq., Royal Engineers. Also presentations to the museum of specimen horses' feet, and some interesting specimen calculi, with their previous history, have been sent in by M. E. Naylor, Esq., of Wakefield, and Geo. Fleming, Esq., R.E., Chatham.

The Central Veterinary Medical Society renewed their application to the Council for the use of the Board-room to hold their meetings, which was granted.

The financial report is annexed. The balance in hand after defraying the expenses of the year amounts to £316 16*s*.

S. H. WITHERS, TREASURER, *in Account with the Council of the Royal College of Veterinary Surgeons,*
From APRIL 1*st*, 1874, *to* MARCH 31*st*, 1875.

Dr.

	£	*s.*	*d.*
Balance at Bankers', April, 1874	277	0	6
Examination Fees to March 31st, 1875	1,081	10	0
Interest on Deposit Account	4	11	2
Dividends	19	1	4
Registers	0	13	0
Property Tax	0	11	8
Gas consumed by C.V.M. Soc.	1	17	6
	£1,385	5	2

Cr.

	£	*s.*	*d.*
Examiners' Fees and Expenses	642	2	9
Rent	70	0	0
Rates and Taxes	36	4	0
Salary to Secretary	150	0	0
Insurances	1	18	9
Advertisements	8	14	2
Printing	24	9	0
Stationery and Postage Stamps	20	19	4
Books for Library	2	8	6
Reporters	11	0	6
Coals, Gas and Wood	21	8	0
Law Expenses	22	19	0
Repairs	9	8	8
Drugs	0	3	9
Wages	20	0	0
Petty House Expenses	26	12	9
Balance at Bankers'	316	16	0
	£1,385	5	2

Amount of Stock standing in the names of the Trustees, £640 19 11 Three per cent. Consols.

We, the undersigned, have examined the above accounts, and have found them correct.

April 16, 1875.

ALEX. C. COPE,
GEORGE SOUTH, } *Auditors.*

COLLEGE FUND.

The following List of Subscribers to the Fund for Building or purchasing suitable premises for the offices of the College is complete to the present date, April 30th, 1875.

	£	s.	d.
Donation originally given by T. W. Mayer, Esq., in 1849	37	14	7
Interest thereon	27	2	6
Adlard, J. E., Esq., London	1	1	0
Arnold, Messrs. & Sons, Smithfield, London	5	5	0
Axe, J. W., Assist.-Professor, R.V.C., London	2	2	0
Axe, Joseph Machin, Esq., Doncaster	1	1	0
Balls, Messrs. G., and Son, Brixton	21	0	0
Barford, John Davis, Esq., Southampton	2	2	0
Barker, William, Esq., Middlesborough	2	0	0
Batt, Hartley Thos., Esq., London	10	0	0
Bentley, William, Esq., Margate	1	1	0
Bland, Wm. Colley, Esq., Newbury, Berks	5	0	0
Broad, James C., Esq., London	10	0	0
Broad, Alfred, Esq., St. John's Wood, London	2	2	0
Broughton, William, Esq., Leeds	2	2	0
Brown, G. T., Professor, R.V.C., London	20	0	0
Brown, John, Esq., London	2	2	0
Burgess, Willows & Francis, Messrs., London	5	5	0
Burrell, Messrs. T., and Son, London	10	10	0
Burt, Messrs. W. and W., Brighton	5	0	0
Carless, Messrs. J., and Son, Stafford	2	0	0
Carter, Joseph Shepherd, Esq., Bradford	2	2	0
Cartledge, B., Esq., Sheffield	21	0	0
Cartwright and Hill, Messrs., Wolverhampton	50	0	0
Case, Edward, Esq., Fakenham, Norfolk	1	1	0
Cave, George, Esq., Liverpool	5	5	0
Cheesman, John Jas., Esq., Wandsworth	5	0	0
Child, James, Esq., Hackney	5	0	0
Clark, James, Esq., Cupar Angus, Perth	1	0	0
Clark, William, Esq., Islington.	3	3	0
Coates, Mr. W. H., London	5	0	0
Coe, Joseph, Esq., Stoke-upon-Trent	2	2	0
Coleman, Edward, Esq., London	2	2	0
Collings, John Jas., Esq., Plymouth	2	2	0
Collins, Jas., Esq., Staff V.S., Dublin	5	5	0
Constant, S. P., Esq., 5th Drag. Guards, Dundalk	5	5	0
Cooper, William, Esq., Berkhampstead	5	5	0
Cope, Alexander C., Esq., London	5	5	0

	£	s.	d.
Corby, Thomas, Esq., Hackney	2	2	0
Cox, John Roalfe, Esq., London	10	0	0
Crowe, W. A., Esq., London	1	1	0
Cuthbert, John, Esq., Leeds	2	2	0
Death, W., Esq., Army Service Corps, Aldershot	1	1	0
Dray, E. C., Esq., Wandsworth	5	0	0
Elam, William Chas., Esq., Liverpool	2	2	0
Fahey, John, Esq., Nenagh County, Tipperary	2	2	0
Farrow, Wm. Hastings, Esq., London	5	0	0
Field, William, Esq., London	100	0	0
Field, William, Esq., jun., London	100	0	0
Fitzwygram, Col. Sir F. W., Bart., London	210	0	0
Fleming, G., Esq., Royal Engineers, Chatham	5	5	0
Freeman, James, Esq., Hull	1	10	0
Freeman, John, Esq., Hull	1	10	0
Freeman, Joseph, Esq., Keyingham, Hull	1	10	0
Fryer, John, Esq., Fleetham, Bedale	2	0	0
Gadsden, John W., Philadelphia, U.S.	5	5	0
Gill, Samuel, Esq., Hastings	1	1	0
Goodall, Henry John, Esq., Melton Mowbray	1	1	0
Gould, George Jas.,Esq., Southampton	2	2	0
Gowing, Messrs. T. W., and Son, London	10	0	0
Greaves, Thomas, Esq., Manchester	20	0	0
Gregory, John B., Esq., Portsmouth	2	12	6
Grice, Charles C., Esq., New York	5	5	0
Hammond, John, Esq., Bale, Norfolk	1	1	0
Harpley, M. J., Esq., Anonymous	5	5	0
Harpley, M. J., Esq., Royal Horse Guards	5	5	0
Harwood, Thomas, Esq., Liverpool	2	2	0
Hedley, Matthew, Esq., Darlington	2	2	0
Hills, Osborn J., Esq., Leamington	5	0	0
Howard, John, Esq., Woolwich	1	1	0
Howard, Richard, Esq., Thetford, Norfolk	1	1	0
Hunt and Parker, Messrs., Birmingham	50	0	0
Jarvis, Frederick, Esq., London	10	10	0
Kennedy, Thomas, Esq., Wrexham	1	0	0
Kent, W. H., Esq., London	5	5	0
King, John Thos., Esq., Bournemouth, Hants	1	1	0
Lambert, James, Esq., 17th Lancers, Dublin	2	0	0
Lawson, Alexander, Esq., Manchester	5	5	0
Lepper, Messrs. H. and G. A., Son, Aylesbury	10	10	0
Longman, Geo., Esq., Cavalry Depôt, Canterbury	2	2	0
Lowe, Clement, Esq., London	2	2	0
Malcolm, John, Esq., Enniscorthy	2	2	0

	£	s.	d.
Markham, John, Esq., Rugeley, Stafford	2	0	0
Martin, John Bean, Esq., Rochester	2	0	0
Mavor, William, Esq., St. Leonard's-on-Sea	10	0	0
Mavor, Messrs. Alexander and F. J., London	50	0	0
Merrick, Thos. Jas., Esq., Northampton	5	5	0
Moon, James, Esq., Kingston-on-Thames	5	0	0
Moore, James, Esq., London	5	0	0
Moore, Jas., Esq., jun., London	2	2	0
Moore, W. J., Esq., Junior Army and Navy Club	10	10	0
Moss, Michael, Esq., Sittingbourne, Kent	1	1	0
Naylor, M. E., Esq., Wakefield	10	0	0
Nettleship, Edward, Esq., London	2	2	0
Olver, Harry, Esq., Tamworth	1	1	0
Olver, Thomas, Esq., Truro	1	1	0
Overed, J. D., Esq., Blofield, Norfolk	2	2	0
Owles, Alfred J., Esq., Staff V.S., Aldershot	1	1	0
Paton, Thomas, Esq., Army Service Corps, Dublin	1	1	0
Pearce, J. H., Esq., Whitchurch, Hants	1	0	0
Peele, Henry, Esq., West Hartlepool	2	2	0
Penhale, William, Esq., Barnstaple, Devon	1	1	0
Penhale, Wm., Esq. junr., Holsworthy, Devon	1	1	0
Price, Thomas S., Kennington Cross	2	2	0
Prudames, Alfred, Esq., Great Berkhampstead	2	2	0
Ritchie, James, Esq., Gateside, Kincaldrum	5	0	0
Robertson, William, Esq., Kelso, Roxburghshire	3	3	0
Roots, William, Esq., London	2	2	0
Rowe, James, junr., London	5	0	0
Simonds, J. B., Professor, Principal R.V.C., London	30	0	0
Smith, William, Esq., Norwich	5	0	0
Smith, George, Esq., Hanley, Staffordshire	1	1	0
South, George, Esq., London	5	5	0
Stanley, Edward, Esq., Warwick	5	0	0
Stanley, Thomas, Esq., Edmonton	5	0	0
Taylor, James, Esq., Colchester	3	3	0
Taylor, William Baxter, Rotherham	2	2	0
Thomson, George, Esq., Horncastle	1	1	0
Walker, Alfred, Esq., Rugby	5	0	0
Wallis, W. S., Esq., Halstead	2	2	0
Wells, Thomas, Esq., Bracondale, Norwich	1	1	0
Withers, Samuel Hicks, Esq., London	5	0	0
Withers, Henry, Esq., London	1	0	0
Withers, Alfred, Esq., London	1	0	0
Woodger, Joseph, Esq., London	10	10	0
Woodger, Joseph, Esq., jun.	10	0	0

	£	s.	d.
Wragg, Francis W., London . . .	10	10	0
Yorkshire Veterinary Medical Society . .	50	0	0

A gentleman has offered to give £100 towards the fund, on condition that nine other members of the profession will subscribe not less than £100 each. Or the same gentleman will give £50 provided that nineteen others will subscribe a sum of not less than £50 each for the same purpose.

Mr. Owles moved that the report, including the Treasurer's Annual Balance-sheet, be received.

Professor Branford seconded the motion, which was agreed to.

Mr. Owles asked if the proposed amendment of clauses 13 and 17 in the charter granted to the Royal Veterinary College were carried out.

The President said that on reference to the charter it would be found that it was so.

Mr. Hunting said, he did not understand whether those amendments proposed by Mr. Cotton stood as part of the Charter or not.

The President said that they did, and he might add that he wrote to Professor Simonds for the reprint of the Charter, and he received an answer that it was not as yet reprinted, but as soon as it was he should take care that the President of the Council should have a copy: the copy had not as yet arrived.

Mr. Hunting said he should propose as an amendment to the Report being accepted that a paragraph to that effect should be inserted in it, otherwise there was nothing to tell the profession that the amendments had been adopted.

Professor Branford said that he seconded Mr. Hunting's proposition on the understanding that the report gave a fair statement of matters. It is stated that the subject of the Charter having remained in abeyance, several members of Council being anxious to know the result of the Parliamentary agents' letter, private information was supplied that the wishes of the Royal College were complied with, and further that the Attorney-General had stated that had he known the merits of the case he should not have objected to the words being inserted in the Charter of incorporation. That was tantamount to an apology for the present state of matters, and on that ground he seconded the motion of Mr. Owles that the report be accepted.

Mr. Hunting said that, looking at the Report, he had a

right to infer that the amendments were not placed in the Charter. Although private information had been supplied, that had nothing to do with the fact, and it was a fact that ought to be made public in the report. It was of the most vital importance to know whether the amendments were in or not. He came to the meeting with the idea that a gross outrage had been committed on the profession, but he had found that there was nothing of the sort, and that the Royal Veterinary College had only obtained a harmless document enabling them to give prizes and little degrees to the students. He should propose as a matter of clearness that there should be inserted in the report a paragraph to the effect that the amendments had been inserted in the Charter.

The President called Mr. Hunting's attention to the fact that the amendments spoken of were sent to the governors of the Royal Veterinary College, who replied through Professor Simonds to the effect that they assented to those amendments being inserted in the Charter, and there had also been an assurance given by the Attorney General that had he known better the nature of the case he would not have offered any objection to the insertion. He (the President) had had an interview with Professor Simonds since these meetings, and he assured him that the proposed amendments should be inserted, and that he would send him the reprint of the Charter as soon as it was completed.

Mr. Hunting said he was quite satisfied with the explanation of the President, but it did not alter in the slightest what he had said. His only desire was that the matter should appear clearly in print.

Mr. Helmore seconded the amendment on the grounds stated by Mr. Hunting. Without the explanation it seemed to him a most extraordinary piece of ignorance on the part of the Attorney General in a question of so much importance; and he considered that it was the duty of the Council to have brought every influence they have to bear on the Attorney General in the matter. He thought that there should not be such a thing as private information at all, and that the matter ought to have been made known at the earliest meeting of the Council possible. He did not make any charge against the Council, but he thought that throughout there had been too much private dealing in the matter, and that there had been too much vacillation on the part of somebody in not giving the Attorney General better information.

The President assured the meeting that there had been no

reticence or secrecy at all in the matter. The Secretary and himself repeatedly called upon the parliamentary agents who waited on the Privy Council, and the first information the parliamentary agents had from the law officer of the Crown was, that it was not necessary to insert the words; but another interview took place between them (the officers of the Privy Council) and the parliamentary agents, and they gave private information that the Attorney General had looked into the matter further than he had previously done, and he said that had he given the subject more consideration he would have offered no obstacle to the proposed alterations being inserted at the first interview with the parliamentary agents.

Mr. Owles said the matter was a serious one for the profession. He was sorry that the charter in its present form had been granted at all to the Royal Veterinary College. The Council in allowing the clauses to be inserted had conceded the principle of conferring honorary degrees by the Royal Veterinary College to the members of the profession; and in doing so they had taken a false step which he thought would prove disastrous to the whole profession. Some eight or nine years ago the bye-laws of the Charter were suspended with a view of uniting the profession which was not at that time united, and he believed the attempt was very successful. The Scotch schools were consulted and the Scotch veterinary surgeons joined in the body corporate, and there was good reason then to hope that the profession would be united, and that the schools would eventually recognise the Royal College as the university to grant degrees; but now one of the schools had obtained for itself the privilege of conferring honorary degrees, which he thought would render it independent of this licensing university altogether. The Council might confer honorary degrees on members of the profession, but they would do so subject to the opinion of members of the profession, but the Royal Veterinary College was not subject to the body corporate and could not be controlled by them. Another question arose, what were the Scotch schools to do? He thought that had the Council, instead of doing what they did, invited the governors' attention to the probable consequences of their action, they would have withdrawn those clauses altogether, and the Council would have taken action to confer all those degrees themselves upon all members of the profession from whatever school they might come, subject to certain regulations which they might consider necessary. The Council could do nothing except take action in order that in future they might confer certain

degrees, so that students in the Scotch schools might have the opportunity of enjoying them.

The President reminded Mr. Owles that the Council of the Royal College of Veterinary Surgeons had not the power of conferring higher degrees than they had now without a supplementary Charter.

Mr. Owles: If they apply for it they will get it.

The President: The governors of the Royal Veterinary College have the power now of conferring degrees without any Charter whatever.

Mr. Gowing, in answer to the remarks of Messrs. Owles and Helmore, stated that the application of the Royal Veterinary College for a Charter had received the deepest consideration on the part of the Council. There was a great power of opposition against it on the part of many of the members, and it was only at the eleventh hour that it had been obtained. He himself had a great objection to it, and he thought that each school ought to obtain the same position as the Royal Veterinary College now held with regard to conferring degrees; and so long as he served as a member of the Council he should advocate this principle. It was the duty of the Council to take care that the Royal Veterinary College did not possess more power than they ought to possess, and that they should have no further power in granting degrees than what they had now obtained.

Mr. John Moore was inclined to look at the matter in a totally different light from some of the other members. He thought that members of the profession would be satisfied with the degrees obtained from the Royal Veterinary College, and would not apply to the Royal College of Veterinary Surgeons for a diploma, and the College would thus be deprived of the money which they had hitherto received for fees. The Camden Town school would be in the same position with the Council as the Highland and Agricultural Society in Scotland, who granted a diploma with which great numbers of students at the Edinburgh College were satisfied. He thought the Council ought to take action in the matter, and that they should either have the power of granting the degrees themselves or in future of preventing those who obtained degrees from the governors of the Royal Veterinary College to come up to the Royal College of Veterinary Surgeons for examination.

Mr. Owles thought that the members of the profession should make known their wishes to the Council on the matter, and whether it was desirable that they should apply

for power to confer further distinction on deserving members of the profession than that of "membership."

Mr. Fleming said that the granting of the Charter to the Royal Veterinary College had been viewed by the Council as a most serious matter. The first thing that struck him in the whole affair was the secrecy with which the whole affair had been conducted. The Council had obtained information with regard to the Charter by the merest accident in the world. Mr. Gowing had seen the notice in the daily papers of the intention of the Royal Veterinary College to apply for the Charter, and drew the attention of the Council to the fact at the next meeting. Inquiries were then made, and he must confess that the replies sent by the Royal Veterinary College to those inquiries were not of a very satisfactory nature. The Council had no official copy of the Charter in their possession and were working somewhat in the dark. The profession had every right to inquire into the matter, because he maintained that any charter which was obtained would certainly act more or less against the Charter of the Royal College of Veterinary Surgeons. He looked upon the Charter with the greatest suspicion because the power of conferring licences should be altogether beyond the wish of any school that wanted to act fairly to the profession. The Royal College, being the university of the profession, should be the only body who had power to confer degrees, and if those degrees were issued by the school they would certainly not be viewed in the same light or possess the same weight as if they had been granted by the university. He did not think that the school degree would ever carry any weight because there was no board of examination. and they would be merely honorary degrees. Altogether the Charter granted to the Royal Veterinary College, even if the proposed clauses were inserted, might be looked upon as not very dangerous at present; but he looked at them in certain respects as being dangerous if the school was managed by people who did not entertain a very great regard for the welfare of the profession. He held that it was the duty of the entire body of the profession to support the Council in its endeavours to protest against any infringement of its Charter.

Mr. Hunting begged to put his motion formally that at page 12, after Professor Simonds' letter, should be inserted the following words: "The Royal Veterinary College therefore obtained their Charter subject to the amendment proposed by Mr. Cotton;" and further, he moved that a copy of the report with these words in it should be sent by the College to every member of the profession, as the report was

one of the most important that had been presented since he had ever anything to do with the profession.

Mr. Helmore said that in his opinion country people would suffer more from the granting of the degrees by the Royal Veterinary College than those in the towns, as they would not have such an opportunity of knowing the distinction between the Royal College and the school at Camden Town. The only position which the Royal Veterinary College could enjoy from the Charter was a mere legal position which only now and then would come to light. He knew men of great respectability practising in the country without a diploma and who were making large fortunes, showing that after all the successful practice of veterinary medicine depended more upon the man himself than anything the Royal College could give him.

Mr. Harpley thought that if a notice were inserted in the *Veterinarian* to the effect that the amendments proposed by Mr. Cotton were inserted in the Charter it would serve all practical purposes.

Mr. Hunting still urged his motion. He thought that the Royal College ought to have a journal of their own and that they should not be dependent on the School's publication. He should be inclined further to propose that every Council meeting should be reported in full and a copy of the proceeding sent to every member of the profession. If Mr. Harpley's resolution was that "private information was supplied and was correct," and if that were inserted in the report after Professor Simonds' letter, he would withdraw his motion.

Mr. Greaves said he had also looked upon the proposed Charter with suspicion. So long as he was of opinion that the Royal Veterinary College would be empowered to grant honorary degrees or fellowships before a student had got his diploma he opposed it, but the moment Professor Simonds had informed the Council that the governors had consented to the alteration proposed by Mr. Cotton he withdrew his opposition and was satisfied. He felt rather in favour of the College granting those certificates of merit. He was well aware that there were a number of young men that attended those Colleges that neither Professor Simonds, nor Professor Williams, nor Professor McCall could ever make clever, and those men were not deserving of the same certificate of merit as others who had intelligent bright characters. He thought a difference ought to be made both by teaching schools and the Royal Veterinary College between those who had not intelligence and those who had a high degree of intelligence.

Mr. Helmore said he should like to ask the mover of the amendment if he would be willing to withdraw that part of it which proposed to send a copy of the report with the alterations to every member of the profession.

Mr. Hunting said he would be willing to meet Mr. Helmore's wishes so far as to modify his resolution by saying that every member applying for it should have a copy.

After some discussion,

Colonel Sir F. Fitzwygram proposed the following amendment, which was seconded by *Mr. Harpley*, and carried unanimously:

"That the President should wait upon the Chairman of the Royal Veterinary College and ask him to allow him to see the draft of the Charter as finally approved by the Privy Council, and that a slip stating that the alterations suggested by Messrs. Loch and Maclaurin should be appended to the Report."

Mr. Hunting then proposed that the reports of each Council meeting be printed the same as the annual report, and that any member on applying to the Secretary should have a copy of it.

Mr. Branford said he should second the motion on condition that the member should pay for the report, and he would ask the mover to fix a nominal sum.

Mr. Hunting said he should propose it to be sold at cost price.

The motion on being put to the meeting was negatived.

Mr. Helmore begged to call the attention of the Council to the munificent sum which had been presented by Colonel Sir F. Fitzwygram for competition by the students. He thought that the meeting ought not to be allowed to pass without some expression on its part as representing the profession upon the subject. He should move that the warmest thanks of the meeting be given to Colonel Fitzwygram for his munificent gift.

The President said it was with great pleasure that he seconded Mr. Helmore's resolution. He thought that without expressing the warmest thanks to Colonel Fitzwygram before parting the members present would not be doing their duty. The resolution on being put to the meeting was carried with acclamation.

The President moved the adoption of the report and financial statement.

Mr. Broad seconded the motion, which was carried unanimously.

Colonel Fitzwygram in responding to the vote of thanks

passed in his favour said that he looked upon the prizes he had given rather as a stimulus to the schools than to the students. He looked upon it rather as an inter-school prize than an inter-student prize, and he hoped that it would have the effect of raising the tone of education in each of the individual schools. He was sorry to say a misunderstanding had arisen about the terms of competition for the prizes this year which he was sure would not occur again another year. The number of competitors was small, but the person who had won it very easily was Mr. Steel, of the London Veterinary College. There were six competitors altogether and nobody competed from the Glasgow College and nobody from the Clyde Street College. The conditions of the prize were that the competitor was to get half the total number of marks for each subject. Five out of the six wholly failed in that respect, and the consequence was that only one prize was awarded because there was only one competitor who complied with the terms of the prize.

Professor Branford said he should wish to explain that the reason of there being no competitors from the Clyde Street school was in consequence of the students being debarred entrance to compete because they were not at the door at a minute's time. Ten o'clock was the time named for the examination. Seven students entered their names for the competition, two of whom had to attend Mr. Wilkinson at Jock's Lodge at 10 o'clock. Mr. Wilkinson became aware of the examination, for the Fitzwygram prizes began at 10 o'clock at the Freemason's Hall, and sent notices to those students to meet him at Freemason's Hall. In the meantime the persons deputed to act on behalf of the munificent donor refused admission to those students who presented themselves at four minutes to 11, but admitted the students from New College at twenty minutes past 10. He thought that no distinction ought to have been made, but that the doors ought to have been closed at 10 o'clock. That accounted for no competitors appearing from Clyde Street College. If there had been two of those students there they would have come off first or second, as they had carried the gold medals of the Highland Society.

Mr. Fleming said he should like to state that the examiners named by Colonel Fitzwygram to examine the students for this competition did him the honour to ask him to take a large share in thegetting up of the papers, and he could assure the meeting that the duty was a very serious one, inasmuch as every care had to be taken that the schools should have fair play. On drawing up the directions for the superintendents

he took care that the form of the competition was the same as in the Society of Arts and the University of London, and that the examination should take place at the same hour and on the same way in different cities. Of course no blame was to be attached to the examiners in the cases mentioned. It was unlucky that the Clyde Street school students who were to compete were absent at the hour, but it would be seen at once that there was no unfairness whatever. It was an accident which might happen at any examination.

Mr. Pritchard and Mr. Moore, jun., were then appointed scrutineers.

The President said that he had received a letter from Mr Mayer, stating his inability to attend the meeting in consequence of domestic affliction, and another letter received from Professor Simonds dated 1st May, 1875.

ROYAL VETERINARY COLLEGE, CAMDEN TOWN, N.W.;
May 1*st*, 1875.

DEAR MR. PRESIDENT,

It having been intimated to me that some members of the Council of the Royal College of Veterinary Surgeons had expressed an opinion that the time had come for me to retire from office as one of the representatives of the profession on the Council, I have thought that under such circumstances the only consistent and independent course I could take would be to refrain from attending the annual meeting on Monday next, and thus leave the members perfectly free to re-elect me or not as they might see fit.

I express no wish on the subject, but it is right that I should state that if the members of the profession should see fit to retain my services, that I shall continue to carry out the duties of a Member of Council in precisely the same manner as I have hitherto done, and which I flatter myself has not been detrimental to their best interests.

Kindly oblige me by reading this letter to the meeting.

I am, dear Mr. President, &c.,
(Signed) JAS. B. SIMONDS.

E. C. Dray, Esq.

The President said that the meeting would now be called upon to elect six members to the Council to supply vacancies caused by retirement in rotation. The members who retired were Messrs. Simonds, J. Moon, J. C. Broad, T. Burrell, Dray, and G. Balls.

The following nominations took place :

Professor Simonds,	proposed by	Mr. Dray.
Mr. Broad,	,,	Mr. Dray.
Mr. Dray,	,,	Mr. Hunt.
Mr. Talbott,	,,	Prof. Pritchard.
Mr. Moon,	,,	Mr. Gowing.
Mr. Hunting,	,,	Mr. Fleming.
Mr. Martin E. Naylor,	,,	Mr. Coates.
Mr. Barford,	,,	Mr. Moore.
Mr. Balls,	,,	Mr. Coates.
Prof. Walley,	,,	Asst.-Prof. Axe.
Mr. Burrell,	,,	Mr. Rowe.
Mr. Lowe,	,,	Mr. Woodger, sen.
Prof. Branford,	,,	Mr. Mackinder.
Mr. Jas. Cheesman	,,	J. K. Hare.

The result of the ballot was as follows:—

	Votes.
Mr. Dray	35
Mr. Simonds	33
Mr. Broad	33
Mr. Moon	25
Mr. Talbott	21
Mr. Balls	20
Mr. Hunting	19
Mr. Walley	13
Mr. Branford	9
Mr. Naylor	8
Mr. Barford	7
Mr. Lowe	7
Mr. Burrell	4
Mr. Cheesman	2

The President declared Messrs. Dray, Simonds, Broad, Moon, Talbott, and Balls duly elected.

The President announced that a special meeting of the council would take place on May 25th.

Mr. Greaves proposed a vote of thanks to the President for his conduct in the chair and for the manner in which he had presided over the meetings of the council for the past year. The motion was seconded by Mr. Moore and cordially agreed to.

The proceedings then terminated.

In the evening several members of the Council and professional friends dined together at the *Albion Hotel*, Aldersgate Street. The President occupied the Chair.

We are only enabled to add that this very pleasant and social meeting finished the business of a busy day.

ELECTION OF OFFICE-BEARERS FOR THE YEAR 1875-76.

At a special meeting of the Council of the Royal College of Veterinary Surgeons held May 25th, the following gentlemen were elected office-bearers for the year 1875-76:

President.—Col. Sir Frederick Fitzwygram, Bart.

Vice-Presidents.—Messrs. S. H. Withers, T. W. Mayer, H. J. Cartwright, Professor McCall, and Messrs. G. A. Lepper and J. Lawson.

Mr. Withers was re-elected *Treasurer*, and

Mr. Coates *Secretary*.

At the same meeting Dr. Burdon Sanderson was elected an examiner in the place of Dr. Sharpey, resigned.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

The spring quarterly meeting was held at the Queen's Hotel, Leeds, on Wednesday, April 28th. The President, Mr. Anderton, in the chair. The following members were also present:—Messrs. Naylor and Fallding, Wakefield; Greaves, Manchester; Carter and Walker, Bradford; Cuthbert and Ferguson, Leeds; Edmunton, Bedele, and Patterson, Dewsbury.

Messrs. Jones (2nd Dragoon Guards) and Hingston were present as visitors.

Letters of apology for non-attendance were received from Messrs. Dray, Joseph and John Freeman, Broughton, Bale, and Murdock.

The minutes of the last meeting were read and confirmed. Mr. Cuthbert nominated Mr. Faulkner, South Milford, as a member.

A miscellaneous discussion took place. Mr. Walker, Bradford, related a case of fracture of the lower jaw of a horse and described the apparatus he applied. He was requested to allow the members to inspect the apparatus at next meeting. Mr. Patterson promised to read a paper at the next meeting.

Veterinary Jurisprudence.

BRISTOL NISI PRIUS COURT,

April 6th, 1875.

(*Before Lord Chief Baron Kelly.*)

ACTION TO RECOVER THE VALUE OF PIGS. TYPHOID FEVER.

Nicholas v. *Mills* (*S. J.*).—Mr. Cole, Q.C., and Mr. Poole were counsel for plaintiff; Mr. Lopes, Q.C., and Mr. Pinder for defendant.

Mr. Cole, in opening the case, said the plaintiff was a grocer and bacon curer at Corston, and the defendant a miller carrying on business at Woolley Mills, near Bath. The action was brought to recover damages for a very serious loss which the plaintiff had sustained owing, as he alleged, by the sale to him by the defendant of some barley meal of such a character that it seriously injured a large number of pigs which he fed with it, and killed thirty-two of them. The plaintiff kept a very large number of pigs, and used a considerable quantity of barley meal in feeding them. Some time since the defendant introduced himself to the plaintiff as a miller, grinding a large quantity of barley meal, and solicited his custom, saying he could sell him some particularly good. He told him he had two sorts, *firsts* and *seconds*, the latter being what was called mixed. The plaintiff dealt with the defendant for some time, and on one occasion he took some *seconds*, but that did not turn out well, and defendant said that he had better not have that sort again, as he could not recommend it, but that his *first* quality was pure and genuine, and that he could strongly recommend it. On the 27th October, 1874, the plaintiff received from the defendant a letter soliciting an order for some barley meal. He said, "Can I book you five or ten tons of barley meal, *genuine*, at £9 7s. 6d.? If so, say so by return of post. I can deliver five tons at once. I have not offered so low as this to any one else, and this is the lowest possible price I can quote." The learned counsel pointed out that in that letter the defendant warranted the meal as genuine barley meal, and what the jury had to determine was whether what was subsequently supplied by the defendant to the plaintiff was genuine barley meal. On the 31st October plaintiff and defendant met at Bath market, and, after some negotiations, plaintiff agreed to purchase ten tons upon defendant taking off a crown per ton from the price he had quoted. One ton was sent, which turned out very good, and defendant excused himself for not sending the other by saying he had not got sufficient sacks. On the 1st December the defendant sent the remainder, and at that time the plaintiff had seventy-two pigs fatting, and forty-six younger pigs which he had recently bought of Mr. Sargent, and they were all then feeding and

doing very well. The plaintiff mixed the meal in the ordinary way, and almost immediately after the pigs were taken extremely ill, especially the younger pigs, and they got worse and died, until the plaintiff had lost thirty-two of his pigs. When the meal was being put into the cistern the plaintiff remarked to defendant's man that it smelt very sour, and the man replied, "It is a little strong; master has put some wheat with it." On the 5th of December, four days after the receipt of the meal, two pigs died; on the 7th, seven died; on the 9th, five; on the 10th, five; and on the 11th, one, and so on until the 22nd December, when thirty-two had died. On the 9th December plaintiff went to see the defendant, and told him the meal was killing his pigs, and he admitted at once that it was not genuine barley meal, for he said that he put five sacks of barley to one of wheat. Plaintiff said, "It is fearfully strong; it is killing my pigs, and no doubt it must have been sea-damaged wheat." There could be no doubt, said the learned counsel, that the defendant had obtained some sea-damaged wheat, containing a large quantity of salt, which had been ground up with the barley, and it was the commonest thing that if they gave pigs any salt or brine diarrhœa was set up and the pigs died. The defendant said to the plaintiff, "If it is my meal I will pay for every pig that dies." At the request of the defendant the plaintiff sent some of the meal to Mr. Ekin, of Bath, to analyse, but subsequently defendant wrote saying, "Please don't mention my name to Ekin." The analysis, said the learned counsel, showed that the barley meal was mixed with wheat which was much damaged by sea-water; and Mr. Broad, a veterinary surgeon, made a *post-mortem* examination, and gave it as his opinion that the pigs had died of some irritant taken with the food, but without further investigation he could not say what it was. After signing that certificate, he understood that Mr. Broad was going to be called on behalf of the defendant to say the pigs died of typhoid fever. The learned counsel concluded by saying that the loss which the plaintiff sustained by the death of the thirty-two pigs, and the depreciation in value of others by reason of their eating of the meal, was £160, and that was the amount which the action was brought to recover.

The plaintiff was examined in support of the learned counsel's opening, and in the course of his examination in chief he said that when he told the defendant that the meal was affecting the pigs, he told him not to give them any more of it, but that he would grind him some on purpose and send him. Plaintiff killed the whole of the pigs after the thirty-two had died. As there were 118 in all, the total number he killed was eighty-six. The pigs had been sold to a pork dealer, at 11*s.* 9*d.* per score, to be delivered as the butcher required them; but he had to sell them for much less, and the total loss and depreciation in value of the pigs was £120 17*s.* 6*d.* The remainder of the claim was made up of the loss on the meal which was not consumed, and certain incidental expenses.

Mr. Lopes.—You sold three pigs, which cost £6 13*s.* 6*d.*, for £2, showing a loss of £4 13*s.* 6*d.*

Plaintiff.—Yes.

Who bought them?—A pork butcher at Bath.

Were they a little red?—I cannot remember.

On the 13th December you sold ten pigs, value £17 10*s.* for £4 10*s.*?—Yes.

Who bought those?—I could not say.

You sold eighteen pigs, value £46 19*s.*, for £31—a loss of £15?—Yes, to a pork butcher at Bath.

Were they red?—They were not.

Why did you kill the pigs?—I was advised to kill them as fast as I could or else they would all die.

Cross-examined.—Did not buy the meal as mixed meal. Had not heard of a large number of pigs dying in that neighbourhood. Had read Mr. Broad's report in the Bath papers that pigs were dying from the typhoid fever.

Mr. Sargent, pig dealer, of Bath, deposed that the forty-six pigs which he sold to plaintiff were perfectly healthy.

Cross-examined.—He observed no red about the pigs while they were alive. Saw red patches on the dead pigs all over the skin, and some quite purple.

Have you ever heard of a disease called the "soldier?"—No.

His Lordship.—What is that?

Mr. Lopes.—It is the popular term for a disease in which red patches appear. It is so called from the "military tint" (laughter).

Mr. Ekin, analytical chemist, Bath, deposed to having analysed the meal in question. He did not detect any irritant poison, but there was a quantity of wheat mixed with the barley. The sample generally had a very sour smell—was evidently a damaged sample. It contained twenty times the quantity of salt a genuine sample of barley meal would contain. This wheat had been damaged by sea-water. In an interview he had with defendant he made no denial that damaged wheat had been used in the meal, but said it was sold as pig meal. There were 14½ grains of salt in each pound of the barley meal, and if a pig had been fed upon it alone he did not think it would do it any harm. He was not a veterinary surgeon, nor had he any experience in keeping pigs.

The witness produced a small quantity of salt, which he said he had extracted from a pound of the meal.

Mr. Lopes.—About as much as one might eat with his dinner.

Witness.—I should eat a great deal more.

Cross-examined.—He thought it absurd to suppose that such a quantity of salt would hurt a pig.

Re-examined.—Had told defendant's attorney the quantity of salt he had found, but had not told plaintiff's attorney, because he had not been asked.

Mr Thomas Coomber deposed that he was an analytical chemist and lecturer on chemistry at the Bristol Medical and Mining Schools, and that he analysed the meal in question, and found salt in the proportion of a third of a pound to one cwt.

Mr. Bath, veterinary surgeon, assistant to Mr. Barrell, of Keynsham, stated that he visited the plaintiff's pigs at his request. They were very ill with diarrhœa—very dejected in spirits (laughter). Inquired what they had been eating, and was shown some meal. It tasted saline. Made a *post-mortem* examination of four or five pigs which had died. He detailed the symptoms which he found, and said he attributed death to the impure food upon which they had fed; saw no traces to lead him to believe that they had died from typhoid fever. There were certain inevitable signs by which typhoid fever could be detected.

Mr. Lopes.—Have you ever seen a case of typhoid in a pig?—Such a case did not occur whilst I was at the Veterinary College.

Cross-examined.—Mr. Broad had reported that he had attended cases of typhoid in pigs in the neighbourhood.

Mr. Barrell, veterinary surgeon, gave corroborative evidence.

Cross-examined by Mr. Pinder.—Had no personal knowledge of cases of typhoid fever in pigs. Had known of epidemics, but did not know of a certainty of any case of typhoid.

This being the case for the plaintiff,

Mr. Lopes addressed the jury for defendant, and said there were two distinct questions at issue in that case—one was whether or not the defendant misrepresented the quality of the barley meal he sold to the plaintiff, and the other question, and the most important one, was whether or not the barley meal was the immediate cause of the death of the pigs. The learned counsel, after commenting upon the evidence tendered in support of the plaintiff's case, detailed the testimony which defendant's witnesses were prepared to give, and contended that the death of the pigs had resulted from typhoid fever.

The Court adjourned at five o'clock.

On the following day the defendant was called, and deposed that when the purchase of the meal was negotiated, he told plaintiff that if he booked him an order at £8 15*s*. he must have wheat and barley mixed, and that plaintiff said, "I don't care what you use, so long as it don't hurt my pigs." He said he would supply him with an article mixed for pigs, and plaintiff said he would take ten tons. The market price for genuine barley meal was at that time £9 to £9 10*s*. The meal supplied to the plaintiff consisted of wheat and barley, and was in the proportion of about a sack of wheat to five or six sacks of barley. The wheat he obtained from Mr. Robert Brinkworth and from Mr. Peter Prichard—one lot was Spanish and the other English wheat. Witness had a hundred pigs, and they were fed upon the same meal. They did very well upon it. The witness mentioned the names of several persons whom he had supplied with portions of the same meal, and said he had had no complaint from either of them.

Cross-examined by Mr. Cole.—The wheat he bought of Mr. Brinkworth was not, to his knowledge, damaged wheat. He bought it for making flour, but some of the flour he made from it was returned to him. The sample he thought was a very good sample.

Could not tell how the salt got into it. It was a question of degree as to whether wheat with salt in it was damaged wheat. The barley was foreign barley. Believed it came from Russia. As near as he recollected he gave 58*s*. 3*d*. per quarter for the Spanish wheat. Had made no claim against Brinkworth. Thought it a good sample, though it would not grind for flour. Always sold plaintiff genuine barley meal except on two occasions—once when the barley was mixed with vetches, and the occasion in question, when it was mixed with wheat. Plaintiff complained of the meal in which the vetches were mixed, and witness allowed him £1. Did not recollect plaintiff saying that he would never have mixed meal again. Had told him several times never to have any other than genuine barley meal for fattening pigs.

By His Lordship.—Thought the admixture of the wheat with the barley was beneficial to pigs, though the wheat had been damaged by sea-water.

In answer to a further question from the learned Judge, he said he meant if it was not much damaged, but being further interrogated upon the point, he said the meal would of course be better if made with undamaged wheat.

Cross-examined.—Told plaintiff that if he had suspicion of his meal to stop giving it his pigs, and he would send him over some genuine barley meal. He believed the wheat to have been damaged to a certain extent by sea-water.

By the Judge.—Knew that the wheat was not fit for flour when he mixed it with the meal which he supplied to the plaintiff. Did not know nor did he suspect that it was damaged with sea-water.

A juryman remarked that defendant had supplied plaintiff with 16 cwt. of good meal after complaint had been made of the other. He wished to know the price charged for it.

Defendant said that he charged £8 15*s*. per ton, the same as for the rest.

By Mr. Lopes.—He charged the same price because he thought the plaintiff had had a very bad job with his pigs, and that he should have a fair trial of the pure meal.

Mr. Thomas Dyke Broad, veterinary surgeon, of Bath, visited the plaintiff's pigs on the 16th December. The sty was very dirty, and did not appear to have been cleaned for months. Some of the young pigs were ill, suffering from diarrhœa, were sick and their breathing was affected. The witness deposed to having made a *post-mortem* examination of some of the dead bodies of the pigs, and he described the appearances. On a subsequent day Mr. Bath showed him the stomach of a pig he had brought from the plaintiff's, and witness told him that the indications presented were more like typhoid fever than referable to poison. Witness accompanied Mr. Bath to plaintiff's, at Corston. They were then killing all the pigs that were ill, and they made a *post-mortem* examination of more than twenty. The large as well as the smaller intestines were ulcerated. He should think that if 1lb. of barley meal contained the small quantity of salt which was produced by Mr. Ekin on the

previous day it would be beneficial to a pig rather than injurious. Food so affected would not produce the results which he saw. The fact of the barley meal containing salt could not have produced the redness of the skin. The death of the plaintiff's pigs was, in witness's opinion, caused by typhoid fever. Had never expressed any different opinion.

Cross-examined.—Had never seen a case of typhoid in pigs before. Did not say that what he saw was traceable to the food.

His Lordship.—Do you mean that you never at all, from first to last, said it was or might be the food?

Witness.—Never, first nor last, my Lord.

Cross-examined.—Did not say in the presence of Mr. Sargent, "There is no doubt that it is the food." Never expressed that opinion. Did not say to Mr. Vigor, "It is the food, and nothing but the food." On seeing the stomach at Mr. Barrell's he said it was typhoid fever. He lost "the view" for five or six hours. On going home he referred to the work of Dr. Budd on typhoid fever in pigs.

Then, after reading Dr. Budd, you returned to the theory of typhoid fever?—Yes, everything was so beautifully described there (laughter).

When did you read Dr. Budd?—After writing the note to Mr. Bath.

The learned counsel pressed the witness as to the date upon which he read Dr. Budd and wrote the note to Mr. Bath, and Mr. Broad said he did not know whether it was the 16th or 17th.

The letter in question was put in and read by the Judge's Associate. It was addressed to Mr. Bath, and was as follows:

"Veterinary Establishment, Broad Street, Bath,
"December 17th, 1874.

"Dear Sir,—I understand from Mr. Ekin, the chemist, that he has not been able to detect anything of a poisonous nature from his analysis. Under those circumstances I think we had better state in our report that we have examined at Mr. Nicholas's, at Corston, a number of pigs suffering from diarrhœa; also made *post-mortem* examinations on several which have died, and on others which had been killed; and are of the opinion that the cause of disease was some irritant taken with the food, but without further investigation there is no positive proof of what it was.

"Let me know whether you approve of this form.

"Yours faithfully

"Thos. D. Broad."

Cross-examined.—Had heard of salt poisoning pigs. There were cases reported in the *Veterinarian.*

Mr. Cole.—Have you read the Cameron case?

Witness.—As Professor Axe is in court, you had better ask him.

Mr. Cole.—I prefer to "axe" you (laughter).

The Witness said he knew of a pig being poisoned with salt and brine in the space of four hours.

Mr. Freeman, surgeon, of Bath, was examined as to the symptoms of typhoid fever in the human system.

The Court adjourned until the next morning.

Mr. Freeman, re-called and examined by Mr. Pinder, said that the ulcer on the intestines (produced) of plaintiff's pig must have been caused by typhoid fever, of which it was a characteristic. It was a specific ulcer produced by nothing else in nature, and no known kind of irritant poison would produce ulcers of the same description. Did not place any reliance on the skin eruption as diagnostic of typhoid fever.

His Lordship said medical authorities were divided on the subject whether pigs were liable to typhoid fever.

Mr. Lopes requested an opportunity of looking at the intestines produced as having been taken from the plaintiff's pigs.

Mr. Bath, having identified those intestines, said he preserved more, but subsequently destroyed them. Witness took them in view of investigating the case, and found none of the small intestines ulcerated.

Professor Axe, examined by Mr. Lopes, said he had had considerable experience with animals, and had seen both live and dead pigs affected with typhoid fever. Witness received from Mr. Broad two stomachs taken from plaintiff's pigs, and examined them with reference to the lesions upon them. Witness considered the case one of typhoid fever, as in all the *post-mortem* examinations he had made he never saw the same lesions arising from other causes. Those appearances would not be caused by salt, or any poison or substance which witness knew of.

By his Lordship.—Have never fed a pig with meal partly composed of wheat damaged at sea.

Cross-examined.—Believed that salt sometimes produced acute gastritis of the stomach of a pig; strong inflammation soon set up, and resulted in ulceration.

Mr. W. W. Stoddart, F.C.S., analytical chemist, of Bristol, said that last month he received from Mr. Ekin, of Bath, a sample of barley meal. Witness analysed it, and found it to contain some wheat flour, and a little more than the average quantity of salt—5 oz. per cwt., or three tenths per cent. Detected no trace of any poisonous matter which was likely to be injurious to an animal. Had given pigs rock salt, and a certain amount of it in their food was beneficial. Did not think that meal damaged by sea-water to the extent mentioned would be injurious to pigs.

Cross-examined.—Never fed his pigs with meal damaged by sea-water, but was at that time giving them meal containing the same proportion of salt. The sample of meal produced by plaintiff smelt mouldy, and the same as that which he analysed.

Plaintiff, at Mr. Lopes' request, was recalled, and said that a year ago he bought for pig-feeding some damaged wheat which had been

kiln-dried, but witness did not know whether it had been damaged by salt water.

By a Juror.—Had kept pigs for twenty years before these died, but none since.

Mr. Lopes, having intimated that this closed the defence, reviewed the facts, contending that the plaintiff's case depended entirely upon his own evidence, whereas the defendant's explanation of the contract was strongly corroborated, showing that he did not undertake to supply genuine barley meal at this reduced price when the markets were rising. Defendant merely sold it as barley fit for pigs. The learned counsel commented on the fact that the plaintiff had not called Mr. Titley—who was said to have been ill for four days after tasting the meal—nor any one who fed and attended the pigs, to show their condition on arrival. He argued that, apart from the scientific evidence, it was impossible for the meal to have injured the pigs; and it was conclusive that 100 of defendant's pigs and others belonging to the witnesses, though fed upon the same meal, suffered no ill effects. The scientific evidence made a still stronger case for his client, suggesting as it did that the death of these pigs was brought about by typhoid fever, which prevailed in the market where they were bought. Mr. Lopes complained of the insulting manner in which Mr. Broad had been treated in the witness box, and pointed out that no medical man had been called by the plaintiff.

Mr. Cole, in reply, submitted that the action was utterly undefended, and that the simple question was as to damages. Upon the first count in the declaration—that the defendant, having warranted the meal to be genuine, sold what was not genuine—there might be some contest, but he had shown beyond the possibility of a doubt that a warranty had been given. His learned friend had very cautiously and carefully abstained from calling attention to or saying a word about the second count—that the defendant warranted the meal as reasonably fit and proper for the purpose of feeding pigs—and he (Mr. Cole) asked whether the meal which had been produced as a silent witness was fit for the purpose. It was idle for any man to say so; the stuff was about as horrible, stinking, rotten, abominable, worthless, and deleterious a compound as it was possible to place before an animal, and not only turkeys, but dogs refused it.

His Lordship, in summing up the case to the jury, remarked that this was the first time the question of the existence of typhoid fever in pigs ever came before a court of law. He left them to decide four questions—Was this meal bought and sold as genuine barley meal? Was it bought and sold as pig meal? Was it reasonably fit for pigs? And was their death caused by the meal?

After retiring to deliberate for an hour and a half the jury returned and answered the first question in the affirmative, and as to the second they found in the negative, believing that the stuff was sold as barley meal. *The Foreman* added that they could not agree on the other questions.

His Lordship—I am afraid you must retire until you can agree

unless the parties can come to an agreement as to the amount of damages. If you have not agreed at a late hour you must be discharged unless the plaintiff is content to take a verdict for nominal damages.

Mr. Cole contended that on the first count plaintiff was entitled not only to nominal damages, but at all events to the value of the meal.

The Foreman intimated that the jury had agreed upon £20 as the damages on the first count; on the second count, they found for the defendant; on the third count (fraudulent representation), for the plaintiff: and on the last question—the cause of the pigs' death—they could not answer, and it was therefore withdrawn.

His Lordship took the verdict for plaintiff on the first and third counts, with leave for defendant to move to set it aside, and certified for a special jury. The learned *Judge* added that he did not at all wonder at the jury having so much difficulty about the last question; if called upon perhaps he would have been in as great doubt and difficulty.

PARLIAMENTARY INTELLIGENCE.

ALLEGED ILL-TREATMENT OF CATTLE.

HOUSE OF LORDS, *April 30th.*

Earl De La Warr called attention to a letter which had appeared in *The Times* from Captain S. Stanley relative to the ill-treatment of cattle on the voyage between Antwerp and Deptford. He asked the Lord President of the Council whether the statements contained in that letter were correct, and if so whether any steps were to be taken to prevent a recurrence of the evils complained of. The noble lord added that since the appearance of Captain Stanley's letter in *The Times* he had received a communication from a resident at Deptford confirming it in every particular.

The Duke of Richmond disputed the accuracy of the statements referred to. The name of the vessel in connexion with which the ill-treatment was alleged to have occurred had not been given. But, on seeing the letter in *The Times* of the 22nd of April, he directed the Inspector of the Privy Council at Deptford—a very experienced officer of 25 years' standing—to inquire into and make a special report on the case. The vessel referred to appeared to be one which brought from Antwerp about 200 cattle. These beasts were landed at Deptford as usual under the superintendence of the Custom-house officer, and remained

in charge of an officer of the Privy Council until they were taken away to be slaughtered. The Inspector had himself seen them, but had failed to observe any indications of their having suffered ill-treatment on board ship. They were described as having been packed "like herrings in a barrel," but the plain truth of the matter was that they were ranged together with their heads tied up—an arrangement which was necessary both for their own safety and that of the passengers and crew. With reference to the absence of water, he was informed that it was very difficult indeed to induce cattle to drink on board ship until they had been at sea for a much longer period than appeared to have been taken up on the present voyage—namely, 22 hours. He was informed that during that space of time the discomfort was not unusually so great that quadrupeds as well as bipeds, were not much disposed to drink. The Custom-house officer, too, stated that he was present during the whole of the landing, and that he saw no acts of cruelty on the part of the drovers, which he should have done had they occurred. Again, at the landing-stage at Deptford the officers of the Society for the Prevention of Cruelty to Animals were present, with whom would lie the duty of the institution of a prosecution if they were aware that the animals had been cruelly treated. The Inspector of the Privy Council, he might add, concluded his report by stating that in the course of the frequent inspections which he had made of the carcases of animals at the slaughterhouse at Deptford, he found them to be generally free from marks and bruises, and that he had no cause to suppose they were subjected to ill-treatment. As to any cruelty on the part of the drovers, he could only say he had been informed that those men were respectable persons licensed by the Corporation, and he believed that so much care was taken to prevent anything like ill-treatment that the Corporation regulated the size of the goads. He would conclude by calling attention to a letter which had been addressed by the Secretary of the Society for the Prevention of Cruelty to Animals to the Veterinary Department of the Privy Council. In it he stated that he had seen Captain Stanley early in the morning of the day in which his letter appeared in *The Times*, but that he could not identify the person in charge of the cattle or any of the actors in the scene which he had described. Captain Stanley added that he did not wish to appear as a witness in the case, and no prosecution, therefore, could well be instituted by the Society. That being so, he was not prepared to take any further steps in the matter, or to make any regulations beyond those which at present existed.

ROYAL VETERINARY COLLEGE.

HOSPITAL SURGEON.

We have much pleasure in announcing that Mr. F. T. Oatway, Bideford, has been appointed Acting-Hospital-Surgeon at this Institution on a competitive examination; the other candidates were Mr. J. F. Oliver, Derby, and Mr. W. Bontoft, Mareham-le-Fen, Lincolnshire.

The examination test was of a high order, and being both written and oral occupied a considerable time.

The competitors were so equally matched that much difficulty was experienced in coming to a decision on their respective fitness for the office.

SUMMER SESSION.

The following students have been appointed office-bearers on a competitive examination:

CLINICAL CLERKS.

Mr. P. W. Powell.	Mr. M. M. Rock.
— W. H. Jones.	— H. Jennings.
— E. Rivett.	— W. H. Hughes.
— W. Lodge.	— W. Rose.

MONITORS.—CLASS B.

Mr. E. Rivett.	Mr. W. H. Hughes.
— M. M. Rock.	— J. Mosedale.

COLEMAN PRIZE AWARD.

At the meeting of the Committee of Governors of the Royal Veterinary College, held on Saturday, May 22nd, the report of the Professors on the respective merits of the competitive essays for the Coleman Prize was handed in. It stated that the greatest number of marks had been assigned to the essay bearing the motto *Spes* (20). The other essays in the order of merit were those having the respective mottoes of *Prehensio; Labor Omnia Vincit* (11), and *Veni, Vidi, Vici.*

On opening the sealed envelopes, the Chairman announced the winner of the *Silver Medal* to be Mr. J. H. Steel, Manchester;

the *Bronze Medal*, Mr. G. W. Carter, Bradford; *First Certificate of Merit*, Mr. Geo. Burton, Paynton, Devon; and *Second Certificate of Merit*, Mr. J. F. Oliver, Derby.

Sixteen competitors appeared in the field, and it is right to add that, with two or three exceptions, all the essays were of high order, and reflected credit on the respective authors.

It will be observed that Mr. Steel wins both the "Coleman Silver Medal" and the "Fitzwygram First Prize."

MISCELLANEA.

A HORSE'S PETITION TO HIS DRIVER.

"Going up hill, whip me not; coming down hill, hurry me not; loose in the stable, forget me not; of hay and corn, rob me not; of clean water, stint me not; with sponge and brush, neglect me not; of soft dry bed, deprive me not; tired or hot, wash me not; if sick or cold, chill me not; with bit and reins, oh! jerk me not; and when you are angry, strike me not."

OBITUARY.

We have to record the death of Mr. John Pegler, M.R.C.V.S., Mangersbury, near Stow-on-the-Wold, at the advanced age of 77. His diploma bears date April 25th, 1821.

Also, after a few days' illness, of James Taylor, M.R.C.V.S., Oldham, Lancashire. His diploma bears date May 17th, 1854.

THE

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Communications and Cases.

TYPHOID FEVER IN PIGS.

By J. Wortley Axe, Assistant-Professor in the Royal Veterinary College.

(*Continued from p.* 393.)

Since my visit to Bath and Bristol I have been consulted by Mr. Hussey, of Devizes, with reference to several outbreaks of enteric disease in pigs recently purchased in Devizes market. Two of the animals thus affected were brought to the College for my inspection, and at the same time my opinion was sought, not only as to the nature of the malady but also as to the mode of propagation, and the danger arising from exposing infected animals in an open market. One of the pigs brought to the College by Mr. Hussey was in an advanced stage of the disorder with all the characteristic signs of *enteric disease* distinctly marked. The other was dead. Of the latter I made a careful post-mortem examination, and the cutaneous and intestinal lesions as well as other pathological indications of typhoid fever were found to be well developed. The nature of the disease was clearly and definitely pronounced both by the symptoms of the one and the pathological changes observed in the other pig. The virulence and fatality of the affection as well as the mode by which it extends its area were explained to Mr. Hussey, and the peril of exposing infected animals in an open market was then fully recognised by him. Since the appearance of

enteric disease in the neighbourhood of Devizes I am informed that, although no active steps were taken by the Local Authority to prohibit the traffic in pigs, the market has been completely deserted for several weeks. The animal still alive I made use of for experimental purposes, and the results obtained in this direction are to me, as they must be to all pathologists, of the highest importance. That a study of comparative pathology will ere long do much to elucidate many obscure questions in regard to the development and propagation of diseases in mankind is daily becoming more apparent to scientific observers.

From the account furnished to me by Mr. Hussey it seems tolerably clear that many of the pigs in which the disease appeared were infected at the time of purchase in Devizes market. The instances of pigs, suffering from this virulently contagious and malignant disease, being exposed for sale in public places are, I fear, far more numerous than is counted on by the best informed in such matters. As a source of food-supply our pig population represents an important section, and having regard to its insecurity from this cause, it is not too much to hope that ere long the "Contagious Diseases (Animals) Act" will embrace this affection in its catalogue as one deserving of the attention of the legislature. In the entire group of diseases to which this malady essentially belongs I do not know one, the propagation of which is so favoured by the natural habits of the animal it infects as that of *enteric fever*. When it is considered that the pig is a dirt-devouring creature which revels in its own excreta, and seeks its choicest morsels from among the filthy outpourings of its body, this fact is rendered easy of comprehension. Under ordinary circumstances the mortality from this disease cannot be estimated at less than seventy-five per cent., and when it is considered that hundreds of pigs far advanced in the disorder are annually sold as human food, or exposed for sale in an open market, the existence of such an affection must be regarded as a serious national affliction as well as a great sanitary evil.

On the 23rd of April, and on several occasions since that time, Mr. Broad has reported to me fresh outbreaks of this disease; but as they are substantially the same as those already quoted, I shall not repeat them here. The evidence already brought forward in support of the contagious nature of the disease is so forcible and clear that no repetition of facts is needed to sustain the argument. Hitherto I have been endeavouring to show that *enteric disease* in pigs is essentially contagious and destructive, and I cannot refrain from adding to my own experience and to that of others

already quoted the valuable observations of Dr. George Sutton, of Aurora, Indiana.

In 1848, under the head of "Swine Pestilence," he communicated to the 'North American Medico-Chirurgical Review' a graphic and exhaustive account of this disorder as it then prevailed and spread from state to state until the vast pig-population of America was threatened with complete annihilation. So great were its ravages and so irresistible, that one distiller alone, in Indiana, is said to have lost not less than fourteen hundred hogs in one month. Anxious to determine the mode of propagation of this affection, Dr. Sutton resolved to institute a series of experiments. To this end, Messrs. Graffs, distillers, of Aurora, very munificently placed at his disposal a large herd of pigs, and the results of Dr. Sutton's experimental researches fully confirm the inferences drawn from natural cases.

Dr. Sutton's Experiments.

1. Six hogs that had been exposed to the malady by being in contact with diseased hogs were put into a yard by themselves and fed on slop and corn; on the fourteenth day from the time they were exposed to the disease they were all unwell; three died within a week afterwards, the rest recovered.

2. Ninety hogs were exposed to the disease; they were put into a yard by themselves and fed on corn and water, no slop being given; in thirteen days disease made its appearance among them, and they continued to die until sixty out of the ninety died.

3. Fifty hogs were put into a pen by themselves and fed on slop; they had not been exposed to the disease; for six weeks they continued healthy.

4. One hundred hogs that had not been exposed to the disease were put into a yard by themselves and fed on corn and water; for thirty days no symptoms of disease appeared among them; they were then put into a pen with diseased hogs. On the thirteenth day they began to show symptoms of the malady, and the disease rapidly spread among them until forty died.

5. Thirty-three hogs, out of a lot of two hundred and sixty-three, were put into a pen by themselves; for six weeks they continued healthy. The remaining two hundred and thirty were put into a pen, adjoining which were diseased hogs. In thirteen days the disease made its appearance among them, and continued until half died.

6. Four young and healthy hogs were put into a pen in which four days previously diseased hogs had been. They

were fed on corn and water. On the fourteenth day they were all unwell. One died on the fifteenth day, and in five days more they were all dead. This experiment shows that infection may be retained in a pen for several days.

7. On the 28th of October five healthy hogs were inoculated with blood taken from the inflamed tissue of hogs that had died of this disease. On the fourteenth day, November 11th, they were all unwell, and died with but one exception. In three inflammation spread from the point where they were inoculated along the skin and down the legs, which became very much swollen.

"The specific media through which the contagious units are disseminated in the propagation of the disease, and the precise mode of their access, are subjects which hitherto have not received that amount of attention from comparative pathologists which their importance demands. Not until these points are placed beyond the possibility of doubt by direct evidence can we claim to understand the mode by which the malady spreads so far and fast, and kills so surely and quickly. There is good reason to believe that pig-typhoid is by no means a modern disease. To those practically initiated in the pathological features of the affection, a glance at the history of animal plagues seems to indicate that at a very early period this malady was in existence. The records of epizöotics in the pig-herds of this and other countries in past ages are not a few, and then as now whole herds of these creatures were disseminated without regard to age, sex, or condition. Beyond the ambiguous terms of the times which were applied to diseases, and which were besides of a very general character, there remains but little in the history of comparative pathology to guide us in determining the true nature of the disorders referred to. In relation to the disease in question the more striking and significant of the early appellations are "quinsy," "smallpox," and "erysipelas." All these affections, as we know them in our own time, have some characters in common with typhoid fever, and it is not unlikely, therefore, that the last-named disease existed centuries ago under one or all of these several names. Soreness and tumefaction of the throat, arising out of extensive typhoid deposit in the follicles of the fauces and pharynx, might well have been referred to quinsy, as also might the specific cutaneous eruption of enteric disease be ascribed to smallpox, and the cutaneous efflorescence and hæmorrhagic discoloration of skin to erysipelas.

The little attention which was devoted to pathological science in past ages led to a vague and confused nomencla-

ture, which it is hardly creditable to the veterinary profession to say still exists to a lamentable extent. Many diseases having some feeble affinity, although essentially of an entirely different nature, were in numerous instances regarded as identical, and it was equally common to interpret disease by some leading sign rather than by a full consideration of the whole history of the malady and a clear conception of the pathological process involved. Until Dr. Budd enunciated the nature of pig-typhoid and declared it to be the "exact counterpart of enteric fever in man," the primitive appellations, cholera, measles, erysipelas, and a host of other vague and vulgar distinctions, continued to be employed and to indicate the stagnancy of comparative pathology.

During the present century enteric disease has prevailed to a considerable extent in the pig-herds of the United Kingdom, as well as those of America, Australia, France, Germany, and other countries, but until very recently nothing has been done to develop its true nature, or to determine the precise mode of its propagation. With reference to our own country, I am not aware that we have any record of this disorder in modern times, until 1849. In the *Veterinarian* of that year the late Mr. Boughton, of Hounslow, called attention to several outbreaks of what he designated "smallpox in pigs;" but I am convinced by a careful consideration of the symptoms described by him that the malady alluded to was none other than the identical disease in question. The animals affected were dull and indisposed to move. They evinced intense thirst and preferred cold thin-slop to more substantial diet. Indeed they exhibited all the phenomena common to a fever attack. In this condition they continued for a week or ten days, during which time the febrile symptoms daily increased in severity. Soon one or more of their legs enlarged, and the head also became swollen. This was accompanied or followed by an eruption which spread all over the body. The eruption, although seen with difficulty on the dark parts of the body, was nevertheless clearly visible on the lighter parts, and everywhere capable of being "distinctly felt." In character it presented all the appearances of a variolous eruption of the distinct form, and as the disease progressed the resemblance became still more marked by the development of pustules, and ultimately of "*hard dry crusts*."

When the eruption did not so far advance, the spots "died away." It must be admitted, in regard to the outbreaks recorded by Mr. Boughton, that there are certain particulars in reference to its limited spread and mortality which hardly conform to the history of enteric disease as it commonly comes

before us, but I make no doubt that an explanation of these peculiarities would be found in the exceptional circumstances and conditions under which the disease occurred. Unfortunately in this direction we have no sufficient information upon which to form a definite opinion. It is much to be regretted that no account of any post-mortem examination is given, and the history of the eruption is very incomplete.

I cannot here refrain from remarking upon the very general way in which English veterinarians continue to record their pathological observations. The time has surely arrived when something more than a mere reference to the more prominent physical signs of disease should be considered by those who aspire to a knowledge of the principles of comparative pathology. Nothing tends so much to confusion and obscurity as the spare and vague mode of chronicling disease even now so frequently met with. The value of pathological observations can only be rightly estimated by their extent in relation to scientific exactitude.

In 1862 pig-typhoid prevailed as an epizooty in several counties of England causing extensive ravages. My colleague, Professor Simonds, whose services in regard to it were then enlisted, carefully studied the general characters of the affection on several occasions, and at that time he recognised in it the malady commonly known in America as "hog cholera," and in Ireland as the "soldier." For the identification of this disease, and the enunciation of its nature, we are indebted to Dr. William Budd, of Bristol. In his valuable lecture to the members of the Royal Agricultural Society in 1865 he clearly defined the character of the affection, and his vast experience of the typhoid fever of man enabled him to refer to this pig-disease as the "exact counterpart" of that disorder. With this fact before us it is difficult to overcome the idea that ere long the study of comparative pathology must be the means of elucidating some of those vital points in the diseases of man which have hitherto remained so obscure.

In the 'Scottish Farmer,' December, 1863, this disorder is reported to have prevailed for several months in various counties of England. The writer of the article says—"The skin was marked like the human skin in a case of typhus; the subcutaneous fat has been much discoloured by patches of extravasated blood, varying from a pin's head to a crown-piece; the muscles have been similarly discoloured, but greater ravages of blood by transudation could be discerned in the heart, lungs, and kidneys."

In 1864 it continued to prevail to an alarming extent in some parts of Yorkshire and other counties. Mr. Peech, vete-

rinary surgeon, of Wentworth, writing to the *Veterinarian*, describes an outbreak in a herd of pigs, the property of J. R. Bentley, Esq., of Rotherham. At the time Mr. Peech wrote some sixty or seventy pigs had already died. The symptoms and post-mortem lesions described are clearly those of typhoid fever, and so marked were they that Professor Varnell, in his observations on the cases in question, says—"For my own part, by reflecting on the symptoms, death, and *post-mortem* appearances, I have thought the disease might be designated *enteric fever*, induced by a poisoned state of the blood." Clearly this was a correct interpretation of the phenomena of the affection, and the subsequent observation of Dr. Budd that "it is the exact counterpart of typhoid fever in man" fully confirms the more speculative opinion expressed by Professor Varnell. That the opinion expressed by these gentlemen regarding the precise nature of this affection is correct, I hope to prove beyond the possibility of doubt.

Before entering into the consideration of certain experimental facts which I have recently developed, I propose to devote a few lines to the consideration of the prevailing notion among Continental veterinarians as to the nature of this disease. In France and some other countries pig-typhoid is erroneously regarded as an anthracoid affection, and it is known by the term "anthracoid erysipelas." Fleming, in his 'Manual of Sanitary Science,' has unfortunately sanctioned this view by adopting the classification of Continental authors. It is, however, only right to say that in so doing he remarks—

"The highest veterinary authorities are not altogether agreed as to whether the disease of pigs is really of an anthracoid nature. I have followed Roll, Reynal, and other distinguished veterinarians, in placing it here; but Lundel and other equally reliable writers deny that it has any affinity to anthrax, inasmuch as the blood does not present the same alterations as in that disease, but is red and rich in fibrine, and does not contain *bacteridia*. The other essential pathological alterations are also modified or absent, and the malady is not contagious. But it must be remarked that the malady has been recognised as contagious in this and other countries, and that Carsten Harms has found in the blood and other tissues a vegetable parasite not very dissimilar to that observed in anthrax."

That it does not belong to this vague and confused group of disorders is demonstrable in the clearest possible manner. Neither in its origin, development, nor pathological changes does it bear the remotest relation to *anthrax*. The full signifi-

cance of this observation will be readily comprehended on a full consideration of all the essential characters of the two affections. No one practically acquainted with the disease in question can fail to recognise its specific and unalterable nature. Every phase in the entire history of the malady bears the impress of its individuality, and the more we study it in relation to anthracoid affections the more fully is this fact exemplified. It may not be out of place here to inquire what are the special characters which distinguish anthracoid affections. With regard to their origin it can hardly be doubted that a combination of causes more or less definite, and having reference chiefly to food and water, are involved in their production; this has been confirmed again and again in my own experience. The spread of anthracoid diseases is immediately arrested by the judicious handling of alimentary matters, not so much in regard to their kind as to their quantity and conditions. This cannot, however, be stated of enteric disease.

No combination of causes is suggested in the production of this affection. The existence of a specific virus alone, which no ordinary conditions can supply, is absolutely essential to its development. Moreover, it is an experimental fact that while the blood of anthrax-stricken animals will infect and destroy creatures of an entirely different species, the blood of pigs suffering from enteric disease is absolutely inert. Not only is this true of the blood of typhoid patients, but also of the *virus* itself. Nor should it be lost sight of in attempting to establish the diversity of these affections that, while the infecting power of *anthrax* matter is said to be variously modified by climacteric influences, that of pig-typhoid is equally as potent in the tropics as in the polar regions.

Mode of access.—In regard to the mode of access it may be remarked of the former disease that although it is occasionally transmissible by ingestion, and with greater certainty by direct inoculation, the evidence as to its power of infecting through the medium of the atmosphere is purely hypothetical. That pig-typhoid is transmissible through all these sources I shall presently show by the most direct evidence.

Period of latency.—In anthrax the period of latency is brief, so brief, indeed, in the majority of instances, as to extend over not more than a few hours. Enteric disease, on the other hand, requires for its development several days.

Evolution.—Anthracoid affections declare themselves in all their virulence without premonitory warning, and destroy

with a rapidity that is only known in few diseases, and with the certainty of our most deadly poisons. Pig-typhoid unfolds itself in a gradual and definite manner, and its duration extends over weeks.

Morbid anatomy.—If anything were wanted beyond that which has already been advanced to establish the diverse nature of these diseases it will be found in the pathological changes which attend them. In general terms the lesions developed in anthracoid affections have reference to all the tissues and organs of the body, no matter in what animal they may occur. Lymph-exudations and blood-extravasations are the characteristic phenomena of this group of diseases, and to no individual organ or system of organs are these changes confined. Besides the palpable alteration which is manifest in the physical properties of the blood there are also present in this fluid myriads of minute organisms of the lowest type, and these, it would seem from all the facts yet recorded, are characteristics of the malady. The pathological anatomy of *enteric* disease has not a single feature in common with *anthrax*. The morbid changes produced by it are decidedly local and refer to the skin and mucous membrane of the alimentary canal. They are besides definite and specific, as I shall presently show, and in their history and development are unlike anything else in the domain of pathological science. As in other affections belonging to the same group of diseases, supplemental changes do frequently occur, but even these cannot be mistaken by the practical pathologist for those of *anthrax*.

(*To be continued.*) 566

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 396.)

In completing our remarks upon the Rosales we have now to review the natural order Sanguisorbiaceæ—Sanguisorbs, which is distinguished from the rest of the alliance by the following:

Diagnosis.—*Rosal exogens, with apetalous flowers, a solitary carpel, enclosed in a hardened calyx-tube forming a false pericarp.* The absence of Corolla, then, is an important item, but we shall see by an examination of most of the genera that not only the calyx but the stamens are often highly coloured, so that the abnegation of the usually showy parts

of the flower—the petal—would not at first sight be observed.

Three native genera claim our attention; they are as follows:

1. *Sanguisorba*, great burnet.
2. *Poterium*, common salad burnet.
3. *Alchemilla*, lady's mantle.

These genera, though greatly limited in their number of species, are yet of considerable importance, and we shall therefore describe them somewhat in detail.

I. Of the genus Sanguisorba we have but one native species, namely, *S. officinalis*, which may be known from its rounded head of dark purple flowers and pinnate leaves, with deeply notched leaflets, which latter are frequently supplemented with small *stiplets* at the base of their junction with the central rachis.

It has been recommended as a fodder plant, but its growth has not met with much encouragement. Mrs. Lankester tells us that "the plant is cultivated to a considerable extent in Germany for fodder, and has been grown here with that view; but it is not a favorite with English farmers. It was formerly in much repute as a vulnerary, and we read that "burnet is a singular good herb for wounds; it staunches bleeding, and therefore was named *Sanguisorba*, as well taken inwardly, as outwardly applied; also, the leaves of burnet steeped in wine and drunken comfort the heart and make it merrie, and are good against the trembling and shaking thereof. We are incredulous enough to believe that without the prescribed medication wine will still, as of old, gladden the heart of man and sometimes cause him to forget that all good gifts may be abused." It is, however, curious to note how almost all the herbs used by the ancients were directed to be stamped with wine, and in fevers, agues, and oftentimes with ale for lesser complaints. Mixed in this way many a simple was supposed to possess extraordinary power, when perhaps after all the early practitioner, like the more modern one, was depending to a great extent upon the stimulating effects of wine.

But be this as it may, it is not a little curious to find that while the ancients used wine so much as a means for the exhibition of their simples, in the present day wine and spirits are even more extensively employed as remedial agents, but for the most part without the simples.

In the case of the plant before us its astringency, doubtless, caused it to be used to staunch bleeding in wounds, and its use in fluxes and the like was indicated in the same way,

the dark colour of its flowers and other parts of the plant, doubtless, being held as a signature of its value in these respects.

II. Of the genus Poterium we now recognise two species common to Britain, namely,

2. *Poterium Sanguisorba*, common salad burnet;

Poterium muricatum, muricated salad burnet.

The first of these is the common British wild form, and we think the next has been introduced in agricultural seeds from the continent. They have both the same properties, and may therefore here be considered under the same head.

Mr. Syme says that—

"The name of this genus of plants is derived from the use to which one of the species is applied, *poterium* meaning a drinking cup, into the contents of which, in ancient times, this plant often entered; or, according to some writers, the form of the flowers may have suggested the analogy; and the word ποτηριον (*poterion*), a cup, may be the origin of the name."

It seems to us that the appetising smell and flavour, so much like that of the cucumber, suggested its use as a salad herb.

Mrs. Lankester, in her "Notes upon the Salad Burnet" in the new edition of 'English Botany,' has the following remarks, which, though somewhat lengthy, we cannot forbear to refer to, as they are so felicitously appropriate.

"The salad burnet forms much of the turf on some of the dry chalky downs in our southern counties. It was originally brought into notice by Rocque, a gardener at Waltham Green, near London, who found means to recommend it to the Dublin and other agricultural societies, and succeeded in getting it largely used. It does not appear that the attempt to introduce it into agriculture has permanently succeeded. Its produce is seldom very great, it lasts but a short time, and cattle do not appear to relish it very much, especially when fully grown. It was at one time largely used as a salad plant, and was an ordinary ingredient in cool tankards. The leaves, when bruised, taste and smell like cucumber, and are very refreshing. The whole herb is slightly astringent, and possesses many of those qualities which are so valuable in vegetable food when eaten in an uncooked state. We may here remark on the desirability of giving encouragement to the consumption of fresh salad herbs of all sorts, the greater the variety the better; and although those who live in London have little or no opportunity of extending their vegetable dietary beyond the routine supply introduced into Covent Garden Market, those who are in the country may

without expense provide a constant variety of health-giving salad plants for the table. It will appear reasonable to all who care to think on the subject, that green fresh plants contain in their tissues certain salts and other constituents intended by Nature to enter into the human system, and adapted for it. By boiling or otherwise cooking these plants all these valuable substances are lost, unless, indeed, the water in which they are dissolved be drunk with the vegetable, a proceeding which we cannot recommend as palatable. Gerarde says, 'The lesser burnet is plessant to be eaten in sallads, in which it is thought to make the heart merry and glad, as also being put into wine to which it yeeldeth a certaine grace in the drinking.'"

The form we know as *P. muricatum* we think to be only a foreign variety; it is, however, of considerable importance to our cattle from its common admixture with saintfoin seed. The seeds of both the burnet and the saintfoin when unmilled are somewhat brown in colour and wrinkled, and hence, as a rule, the farmer is not observant enough to trace the difference, and so it sometimes occurs that much of the former is sown with the latter, when the following effects take place. Burnet grows rapidly into great bunches, and kills out the saintfoin. Burnet compared with saintfoin is but a weed. Cattle do not greatly care to eat the former which, therefore, can only be looked upon as a mischievous weed. The seeds of the burnet may be known by their quadrangular shape, while the saintfoin seeds are flattened, but, both being more or less wrinkled and somewhat alike in colour, favour the mistake.

So important is this matter that it sometimes happens that a crop which should be saintfoin is greater part burnet. This has led to actions for damages, and certainly if a seedsman sells burnet for saintfoin he should be made responsible, as he knows the difference well enough. It is, however, difficult to separate when once together, and therefore care should be taken that only pure saintfoin crops should be seeded, but it is notorious that the reverse is the rule.

3. The name of the genus Alchemilla is said to come from the word *alkemelych*, the Arabic name for one of the species; another author says it is so named on account of its virtues being in repute with Alchemists.

There are several native forms amongst them, the *A. vulgaris* called Lady's Mantle, from the shape of the leaves, which are not unlike in outline to the tippets sometimes worn by charity children. It was at one time famous

in spasmodic complaints, and it has been fabled as being capable of restoring feminine beauty.

Its roots, too, have been eaten, but at present it is only looked upon as an interesting botanical specimen.

The *A. arvensis*, parsley piert, was sent to us the other day to inquire its nature and origin, as it had taken possession of a pasture as a most troublesome weed, and we have now a pasture on sandy loam in which it greatly abounds. It is, however, soon got rid of. Close depasturing by sheep, so as not to let it seed on the soil, soon settles it, as not only is its propagation prevented,but, were it otherwise, a weed of poor soil is sometimes, though not always, discouraged by richer surroundings.

(*To be continued.*)

ON SOME OF THE USES OF THE PLASTIC APPARATUS IN VETERINARY SURGERY, REFERRING MORE PARTICULARLY TO GUTTA PERCHA AND THAT VARIETY MADE WITH SULPHATE OF LIME.

By R. Spooner Hart, M.R.C.V.S., Calcutta.

The expeditious recovery of cases forms no mean item in the veterinary surgeon's success and establishment, and the few accompanying remarks refer especially to a particular class of cases, the treatment of which may be greatly facilitated by the adoption of the so-called plastic apparatus. The value of the appliance is well known in human medicine, but less so, unfortunately, in veterinary medicine.

The plastic materials usually employed by veterinary surgeons are gum, dextrine, glue, starch, pasteboard, pitch, wax, gutta percha, and sundry other agents, which are variously incorporated to form sticking plasters or charges. With the exception of gutta percha I have had but little experience with any of the agents enumerated, and it is with reference to gutta percha and the plastic apparatus designated the gypsum splint or bandage to which I shall confine my remarks.

Gutta percha and most of the agents mentioned are softened in water and in this way are prepared for use. Gutta percha is easily rendered malleable and manageable by a few seconds' soaking in hot water, and is then moulded

to the part to which it is required to be applied. I have treated many cases of fractured limbs in dogs by the gutta-percha splint, and with good success. Gutta-percha splints, however, possess certain disadvantages, and whilst on the leg require careful watching from the fact of being impervious, retaining the exhalations and discharges which irritate and excoriate the skin. The rigid margins of the splint are also very liable to cause sores. But although gutta-percha splints possess these disadvantages, I have seen equally bad and very ugly accidents attendant upon other forms of apparatus which are in use for the treatment of fractures. In some of these cases it becomes a question which is to be blamed, whether the apparatus, or the surgeon who unintentionally, from a want of experience and knowledge, applies it improperly. I apprehend that most accidents in the treatment of fractures, in the shape of excoriations and gangrenous sores, arise from the bandages being put on too tightly, and the chances of injury are greatly increased when starch or gum or some other plastic agent is incorporated with the substance of the bandage. The veterinary surgeon when setting a fractured limb should use the greatest care in the application of the bandage or whatever form of apparatus he may select to use. The simple starch bandage, if not carefully applied or if left on too long, not unfrequently causes gangrenous sores. When I first started in practice I experienced a few mishaps in the appliance of starch bandages, and have had to remove them from dogs' legs a few hours only after setting a fracture, in consequence of swelling of the foot. On the whole I find gutta-percha splints are not so easy of application, and the results not quite so satisfactory, as compared with the same class of cases when set with the plaster bandage, which is prepared by using dry gypsum incorporated with the meshes of a coarse bandage. The bandaging material used here by me for this purpose is known as Madras cloth, a fine kind of canvas, very light and just of the requisite strength to admit of being applied firmly and tightly to the limb.

Having torn the material to the width and length required, I next proceed to spread one side of the bandage with a thin film of the plaster by the aid of a spatula, spreading about half a yard at a time, and then rolling up rather loosely and so on until the whole length of the bandage has been coated with a thin film of the dry plaster. Before applying the bandage to the limb inequalities of surface have to be made good, and prominences protected by a layer of cotton wadding, or a dry bandage, or both. The plaster bandage

cannot be aptly applied to a limb when enveloped in cotton wool only, but it will be found a better plan to repair inequalities by the placing of rolls and pads of wadding and over them applying a dry bandage. In the case of the carpus I place two rolls of cotton lengthwise of the limb on the postero-lateral aspects of the joint, on either side of the trapezium, which prominence and the tuberosity on the inside of the radius I also take especial care to protect by the placing of large pads of cotton, and over these applying a dry bandage to hold all in position. Having done this, the plastic bandage is next to be immersed in hot water for three or four minutes, during which time hot water should be poured in at either end of the loosely rolled bandage to ensure the centre being saturated; this will be more necessary if the bandage is a long one. The bandage is to be squeezed firmly to get rid of the superfluous water and then applied (over the dry bandage and wadding) to the limb. I usually with my own hands apply the bandage whilst I instruct my native assistant to pass his moistened hands over each successive turn, for by so doing the moistened plaster is rubbed into the meshes of the bandage. After applying the bandage to the leg a fresh quantity of plaster may now be quickly mixed and smeared smoothly all over the surface; this will add to the strength and stiffness of the bandage. After applying the bandage it is necessary to watch the subjects for a few minutes and keep the leg still to enable the plaster to set firmly, which it will do in a few minutes, especially if it be of good quality.

In my practice I have employed the gypsum bandage, principally as a substitute for the simple roller and adhesive plasters, which are not easy of application in our subjects, and further in the treatment of fractures. Compression and uniform support are both agents of great value in the treatment of ailments and accidents occurring to the limbs, and tight bandaging becomes a great desideratum. In applying a gypsum bandage to a limb requiring equable pressure I constantly endeavour to roll the bandage very tightly, without much fear of doing so to an injurious extent, because the cotton very considerably counteracts the tendency of the bandage being applied to the limb too tightly. The simple roller in point of value holds no comparison to the amount of good obtainable when both are applied to cases in which circumstances are equal. You may apply a simple roller to the leg, and, no matter how snugly it is done, it quickly becomes loose, especially when applied to a big œdematous leg; a few movements of the limb suffice to bring this about,

and the object for which it was applied is lost. But the gypsum bandage, when rolled to the extremity in a proper manner, which is easily done after one or two trials, will, when dry, remain the same for days, affording continuous pressure. Extensive wounds on the fore and hind quarters are frequently troublesome cases to deal with, and a long time not unfrequently elapses before the injured horses are ready to resume work. The delay arises chiefly from the position of the wound, the nature of the part, and the incessant rise of granulations, which have to be constantly reduced and kept below the surface. In reducing the granulations, the wound is irritated, and thereby the liability to tetanus is increased. To facilitate the healing process in such cases, you want the sides of the wound drawn together by equable pressure and support, which cannot be obtained by strips of adhesive plaster because they will not adhere, and we have an admirable substitute in the plaster bandage, the constant pressure afforded by which keeps the granulations down, and at the same time draws the sides of the wounds together. Having had practical experience of the immense advantages obtainable by the use of the plaster bandage in the treatment of wounds on the extremities, I beg to suggest that the bandage could be profitably employed in cases of compound injury to the carpus. The present treatment of such cases is very slow and tedious, and the accident results not unfrequently in a large and unsightly joint, interfering with progression. This is as a rule the ultimatum of an extensive injury to the carpus when treated in the usual method. In the event of the bandage becoming moistened with discharge so as to necessitate its removal, the knife should be employed. The removal of a dirty bandage and the application of a clean one should not occupy longer than twenty minutes, so that the effects of the bandage are quickly in operation again. The application of the bandage to a large wound on the leg is followed by a very considerable diminution in the amount of discharge, and the layer of wool placed over the sore before the plaster bandage is applied becomes adherent to the part, forming an artificial scab, and in such a case it may not be necessary to remove the bandage for days. The bandage could easily be protected from discharge and moisture by oil-silk, and if necessary a small drain could be readily devised, imitative of the antiseptic treatment. One of our prominent teachers does not advocate the use of the plastic apparatus made with plaster of Paris, on the ground of its fragility. This I can quite understand with some of the methods of application of gypsum, but in

my experience, I have never seen the disadvantages referred to.

Occasionally the outer layer of loose gypsum which is spread over the surface of the bandage when on the leg, will crack and drop off, but this does not take place with the gypsum which is incorporated with the meshes of the coarse bandaging material. It is true, I have never employed the plaster bandage for a fracture in the horse, but from my knowledge of its use I should expect good results, especially when strips of leather or some other resisting agent could be added between the rolls of the gypsum bandage. By smearing strips of leather or pasteboard with gypsum, they would adhere, and could be conveniently bound on by the turns of the bandage. In the hands of surgeons of ordinary dexterity, I believe this splint could be profitably employed in these cases, as also in many others.

I will conclude this paper by a succinct *résumé* of four cases treated by the application of the splint bandage. The first horse on which I employed this apparatus was a bay gelding, who had received a large wound on the off hind metatarsal bone, exposing both it and the tendons, from the lower part of the hock to the fetlock joint. The case continued to do well, but slowly, when about four weeks after admittance under my care, the patient had an attack of remittent fever, with œdema of the legs, which occurred to a very great extent in the injured limb. After some days the pyrexial state passed off, and the subject came on feed, and three of the legs fined down, but the fourth, the injured one, did not do so, and the wound did not heal. Whenever the horse stood for a few minutes only, there a small pool of water would quickly accumulate on the ground—the fluid came from the œdematous leg, exuding from the wounds, especially the lowest. The treatment indicated for such a case was had recourse to, but without avail. In this dilemma, I was prompted to try the gypsum splint bandage. Twenty-four hours after its application, the dropsical fluid had ceased to ooze from the leg, and from this time the case made a rapid and most successful recovery.

Such was the rapid improvement in this case in the reduction of the size of the leg, that to keep up the pressure I was necessitated to change the bandage every second or third day, thus giving rise to much trouble, for which, however, one was amply rewarded.

I will now relate the case of a dog with a compound fracture of the tibia just above the hock. I applied the bandage, and,

when dry, cut a square hole with some difficulty through the bandage over the site of the wound, so as to dress it; and in four weeks from setting the leg the dog was using the extremity well. The next case was also that of a dog with a simple fracture of the middle of the tibia. By a little traction to the foot, and manipulation to the injured part, the broken ends of the bone were brought into apposition, and held there by an assistant whilst I applied the bandage. The patient, being a great favorite, was taken home, and sent for my inspection fifteen days after. I now removed the bandage and turned to prepare another, and when I again looked towards my patient I saw him standing on his hind legs, and when walking he caused each hind leg to take the whole weight of his body alternately. This is not an exceptional case. I have witnessed dog-patients of mine using the leg very fairly a few days only after setting with the gypsum apparatus, and not unfrequently in a forgetful manner suddenly standing on the defective limb encased in the splint, with the corresponding sound limb elevated for a particular purpose which I need not mention.

The next case was that of a bay gelding with a small circular sore on the front and lower part of the knee; the sore was not larger than a sixpence. The case had been the round of the Calcutta surgeons, and was at last sent to my infirmary. I endeavoured to induce a healing of the part by stimulants, but nothing appeared capable of stimulating the torpidity of the warty-like sore. At the same time I knew I held one factor which would come to my assistance if the measures I was trying failed, and this was the plaster bandage, which I ultimately had to apply. The case gave me no more anxiety.

I claim no originality in this method of using gypsum, for I believe the plaster-of-Paris bandages were in use at University College Hospital in 1857 by Mr. Erichsen. It is said they were in much favour with Pirogoff at Sebastopol; they were also extensively used in the late Franco-German war. I read a description of the apparatus, and conceived that the bandage would prove of value in a certain class of cases for a particular purpose. I tried the remedy in several cases bearing an unpromising aspect, and in instances in which the usual means of cure had failed, and having found that the apparatus performed all I required of it, I was prompted to record my experience for the benefit of brother practitioners. Before concluding I would add one word of caution as to the application of the bandage, and that is to have a care for prominences, and remove the bandage at once when the signal of mischief shows itself in the form of swelling.

MALFORMATION OF HOOF A CAUSE OF DISEASE.

By Williamson Bryden, Veterinary Surgeon, Boston, Massachusetts.

From experiments which I have made by weighing horses' limbs and then each muscle, tendon, bone, &c., separately, comparing the imperfect with those of the perfect, observing the peculiarities of the hoofs and changes in the soft tissues, I am satisfied that an imperfect hoof, according to its particular defects, may interfere with the growth either of the whole limb or only of certain parts of it in the young animal, and in the adult, among other things, cause atrophy and impared function. The necessary harmony of action in the limb is thus lost, and, stringhalt, interfering, over-reaching, pacing, and other peculiarities of gait, result. When, for example, the lower parts of the hind legs are diseased, weak, or irregularly developed, the hock becomes involved and undergoes important changes. Among these, bone spavin may result from an increased demand made on the metatarsal flexor and the ligaments when the enlargement presents itself, the growth being influenced somewhat by the debility of the parts from age, structural changes, &c. An attempt is made to meet the increased demand and its intensity in a manner somewhat similar to that by which Professor E. J. Marey, of Paris, explains accidental and projecting apophyses and anchyloses; when the demand may have continued longer, the articular cartilages and ligaments becoming transformed into bone. Weed and swelled legs may be caused by peripheral interference with the circulation.

QUERIES SUGGESTED BY A FIVE YEARS' ACQUAINTANCE WITH THE PROFESSION.

"Mackcam," M.R.C.V.S.

1. Do half the members of the Royal College of Veterinary Surgeons know the difference between the Royal College of Veterinary Surgeons and the Royal Veterinary College, London?

2. What is the idea of those members of the Royal College of Veterinary Surgeons who, having studied at Edinburgh, append the letters "M.R.C.V.S., L. & E." to their names? Are they so imperfectly acquainted with the constitution of their profession as to imagine they are members of a Royal College of Veterinary Surgeons of Edinburgh?

3. Does not the Royal College of Veterinary Surgeons for several reasons occupy comparatively, with other similarly situated institutions, an anomalous position with respect to the profession and the public—as, by the want of a journal; by the teachers of the various schools pointing out and, in effect, choosing the examiners; by the council being to too great an extent composed of the teachers of the schools whose interest it is to "pass" as many students as they can, and hence whose interests are directly opposed to certain alterations recently initiated in the mode of the examination of their students by the Royal College of Veterinary Surgeons, such alterations being the ensuring, or attempt at ensuring, that the examinations are sufficiently searching to prevent a shopman, clerk, or what not, from obtaining a diploma when a curriculum of one summer and two short winter sessions has given him the only ground he has to impose himself on the public as a qualified veterinary surgeon? The substitution of a short examination in writing for the, at present, wholly oral one, so that the examiners might have an opportunity of judging as to the character of the preliminary examination carried out by certain of the schools, would be useful.

4. Is not the 'Veterinarian'—to our shame the only journal in any way connected with the profession in England—read on the Continent, in the Colonies, America, &c.? and hence must not our excellencies and shortcomings be known there?

5. As compared with veterinary science abroad, are we not two-thirds of a century behind the rest of the world, and this in a country where the whole of the animal creation is worth more than elsewhere?

6. Do not the schools periodically send up for examination by the boards representing the Royal College of Veterinary Surgeons, among others, a number of youths whose general educational acquirements come up to so low a standard that they cannot reap the benefit of their teachers' efforts to impart the necessary technical knowledge, and is not the Royal College of Veterinary Surgeons, if it confer on an incompetent its diploma, responsible to the public and to the respect-

able practitioner for placing him in the same category with such an undesirable companion?

7. Does not the evidence of veterinary witnesses in too many cases remind us of that of Tutch Duckett, the Preston horse-dealer, who, when in the witness-box, was asked by counsel—"You mean to say this horse was sixteen feet high, do you?" "No, I said sixteen hands." "You said sixteen feet," returned the lawyer. "Did I?" rejoined the dealer, "then I'll stick to it."

8. Would not the Royal College of Veterinary Surgeons be of more service to the profession and the country if it had the power to prevent the assumption by any one of the title of veterinary surgeon who chooses to assume it? Is it not possible for the Royal College of Veterinary Surgeons to acquire and exercise this power? and would it not be a graceful act of justice to recognise all at present practising as veterinary surgeons—not, however, as in any way connected with the profession, but to leave them just as we find them, by courtesy using the name, and then to render all who for the future should call themselves such (except the duly examined members of the profession) liable to the infliction of a penalty, as the druggists have recently done, thus placing themselves in a few months in such a position that none can call himself a druggist without passing a series of stringent examinations, or becoming liable to penalty after penalty?

9. Is it not a fact that any rejected veterinary student can, and many do, not only call themselves veterinary surgeons, but even title themselves members of the college they honored with their presence as students?

10. Is it generally known by the profession that, by the provisions of the Pharmacy Act, the members of the Royal College of Veterinary Surgeons and the holders of the Highland and Agricultural Society's certificate are alike recognised as qualified to enjoy the privileges of the Act, along with the legally qualified medical man and registered druggist, to the exclusion of all others? This Act regulates the sale of certain poisons, and may be seen by application at the counter of any retailer of drugs. If in the opinion of a late President of the Royal College of Veterinary Surgeons our exception to serve on juries was "a death-blow to quackery," what is this Act, unless, indeed, the holders of the Highland Society's certificate, who were ignored in the Juries Bill, are quacks? which I dare say the most conservative members of the profession will hesitate to affirm.

11. What is to prevent the schools, or some of them, from

ignoring the Royal College of Veterinary Surgeons, and in the cases of their rejected students, or those who don't care to undergo the ordeal of the examination of that institution, from giving them a documentary evidence of their having attended a certain time at such and such a college, and that therefore they are veterinary surgeons of the highest status, except the power on the part of the Royal College of Veterinary Surgeons of preventing the right to use the title of "Veterinary Surgeon" by any except those to whom Parliament already extends, or may extend, its recognition. The Royal College of Veterinary Surgeons could obtain this power for the asking for it; and yet, rather than concede the title of "Veterinary Surgeon" to those whom no law can deter from using it, the Royal College of Veterinary Surgeons stands by in suicidal apathy. In fact, rather than acknowledge that what a class of men has possessed for ages, and what the law prevents it from using, belongs to it, the College stands in its own light, while the ground may be cut from under its own feet by the schools prevailing on their students to practise with no credentials but what are conferred by these competing schools after an "examination" at which no one would be rejected. Are there not many men who have been rejected by the Royal College practising as members of this or that college in the country? There are. How is the public to distinguish them from the members of the Royal College of Veterinary Surgeons when many of the latter don't know them themselves?

12. Did not a principal of a school a short time ago write to the editor of a Yorkshire paper to the effect that Mr. I—, whose status had been questioned, was a "Member of the Royal Veterinary College, Edinburgh?" The same Mr. I—, having been a student of that establishment who had not been considered worthy of the diploma of the Royal College of Veterinary Surgeons after due examinations.

13. Does not the tone recently assumed by the various schools savour of disloyalty to the profession? Is not mutual jealousy the cause, and does not the rather more searching nature of the examinations to which their students are now put at the hands of the Royal College of Veterinary Surgeons contribute to this end?

14. Has the Royal College of Veterinary Surgeons the power to prevent men of defective education from obtaining its diploma? Is the "horsey gentleman" who delivered himself as follows, a worthy representative of a so-called learned profession?—"It was not the practical part of the examination that gave the 'shakes,' but the theatrical!" How

many degrees higher in the opinion of the public will he raise the profession? and why should an educated stockowner prefer his services to those of the regular quack, whether the latter calls himself "veterinary surgeon" or farrier? This "theatrically" minded individual had run the gauntlet of the preliminary examination, and is now as eminent a member of the Royal College of Veterinary Surgeons as many more.

15. Does not the very existence of the Royal College of Veterinary Surgeons depend on the acquirement and exercise of the power to prevent any man calling himself a veterinary surgeon, except, of course, present practitioners and future individuals who shall succeed in obtaining its diploma, and, since the recognition of the holders of the Highland Society's certificate is an accomplished fact, all who may hereafter obtain it? Are not the schools capable of turning out upwards of 200 so-called veterinary surgeons annually if they should ever consider their pupils' acquirements of too meagre a quality to please the Examiners of the Royal College of Veterinary Surgeons?

Pathological Contributions.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the month of May, 1875, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

"Also, whether the Foreign Ports from which the Animals are brought are in Scheduled or Unscheduled Countries, and the Number of Healthy Animals brought in the same Vessels with the Diseased Animals, and the mode in which such Healthy Animals have been disposed of, whether by slaughter or otherwise.

SCHEDULED COUNTRIES.

Ports in Scheduled Countries from which brought.	Ports in Great Britain to which brought.	Disease.	Diseased Animals. Number of Diseased Animals. Cattle.	Sheep.	Goats.	Swine.	Total.	Disposal.	Healthy Animals.* Number of Healthy Animals brought in the same Vessels with Diseased Animals. Cattle.	Sheep.	Goats.	Swine.	Total.	Disposal.
Antwerp . .	London . . .	Foot-and-Mouth	46	52	...	...	98	Slaughtered under the instructions of the Privy Council.	264	118	...	...	382	Slaughtered under the instructions of the Privy Council.
,,	,,	Sheep Scab . .	...	29†	...	...	29†	Ditto	...	...	...	...	...	Ditto
Boulogne . .	,,	Foot-and-Mouth	10	...	...	96	106	Ditto	15	432	...	...	447	Ditto
Bremen . . .	,,	,,	51	40	...	...	91	Ditto	135	2310	...	...	2445	Ditto
Bremerhafen .	Hull	,,	...	6	...	...	6	Ditto	45	242	...	...	287	Ditto
Hamburg . .	Goole	,,	1	...	...	...	1	Ditto	31	24	...	...	55	Ditto
,,	Grimsby . . .	,,	...	...	...	122	122	Ditto	...	...	...	44	44	Ditto
,,	Hartlepool . .	,,	4	8	...	...	12	Ditto	148	302	...	...	450	Ditto
,,	Hull	,,	93	7	...	78	178	Ditto	916	429	...	35	1370	Ditto
,,	Leith	,,	...	3	...	...	3	Ditto	...	310	...	...	310	Ditto
,,	London . . .	,,	360	19	...	379	758	Ditto, except two which died at the place of landing.	759	239	...	37	1035	Ditto
,,	Middlesborough	,,	4	...	...	...	4	Slaughtered under the instructions of the Privy Council.	51	...	...	...	51	Ditto
,,	Newcastle-upon-Tyne . . .	,,	...	20	...	...	20	Ditto	...	229	...	...	229	Ditto
,,	Sunderland . .	,,	...	8	...	...	8	Ditto	...	362	...	...	362	Ditto
Havre . . .	London . . .	,,	7	...	...	...	7	Ditto	18	...	...	...	18	Ditto
St. Nazaire .	,,	,,	71	...	...	...	71	Ditto	29	...	...	...	29	Ditto
Total Diseased Animals .		Foot-and-Mouth	648	163	...	675	1486	Total Healthy Animals .	2411	4997	...	116	7524	
,, ,, ,,		Sheep Scab . .	...	29	...	...	29							
Total			648	192	...	675	1515							

UNSCHEDULED COUNTRIES.

Gothenburg .	London . . .	Foot-and-Mouth	148	...	...	...	148	Ditto	199	...	...	...	199	Ditto
,,	South Shields .	,,	2	...	...	...	2	Ditto	34	...	...	...	34	Ditto
Harlingen . .	Hull	,,	...	3	...	...	3	Ditto	283	80	...	13	376	Ditto
Rotterdam . .	,,	,,	3	1	...	...	4	Ditto	276	23	...	...	299	Ditto
,,	London . . .	,,	63	...	...	...	63	Ditto	268	59	...	...	327	Ditto
Total Diseased Animals .		Foot-and-Mouth	216	4	...	...	220	Total Healthy Animals .	1060	162	...	13	1235	

* "Healthy Animals" means Animals which were not found to be diseased on inspection on landing.
† These sheep were brought in the same vessel with others affected with foot-and-mouth disease.

"Veterinary Department, Privy Council Office, June 17th, 1875."

"ALEXANDER WILLIAMS, *Secretary.*

CATTLE PLAGUE.

This disease is reported at Zastow and Waever, and at fifteen places in the Government of Siedla in Poland.

The disease having disappeared in Dalmatia, the Austrian provinces are reported free. Cattle plague, however, still remains in Croatia and the military frontier.

PLEURO-PNEUMONIA.

This disease has spread to a considerable extent in the State of New Jersey, in the U.S.A.

In Holland, there is a great diminution in the number of cases compared with the corresponding period of last year. Suspected animals are kept in the stalls in South Holland registered and inspected, while in Friesland, cattle not suspected are kept under observation.

FOOT-AND-MOUTH DISEASE.

This disease has appeared in the New Forest, and in several districts in the neighbourhood; but it has not assumed a fatal form.

Facts and Observations.

Parasites from the Horse, Elephant, Rhinoceros, and other Animals.—The Museum of the Royal Veterinary College has lately been enriched by a series of remarkable entozoa sent to Dr. Cobbold by various gentlemen. From a frequent contributor, Mr. Spooner Hart, of Calcutta, we have received specimens of *Amphistomata* from the rumen of the ox, *Oxyurides* from the fæces of the horse, and some remarkably fine bots, or *Œstrus* larvæ, from the stomach of the rhinoceros. Mr. F. F. Collins, Officiating Principal V. S., Bengal Army, sends from Simla a unique contribution of *Amphistomata* from the horse. These are new to science. Major Hawkes, of the Madras Staff Corps, likewise sends from Secunderabad a most interesting series of parasites from the elephant, comprising another new species of *Amphistoma*, a large number of the flukes (*Fasciola Jacksoni*,

(T.S.C.), and a few examples of the *Ascaris conchoptera*. Besides the above Dr. Cobbold has to acknowledge the receipt of a great variety of entozoa from different contributors; his especial thanks being due to Dr. Moss, of the Arctic Expedition, to Dr. Brandt, of Oporto, for dipterous larvæ; to Mr. Charles Danford, for bots from the ibex, to Mr. Hooker for *Echinorhynchi;* to Dr. Lewis, of the General Hospital, Calcutta, for examples of *Hæmatozoa;* to Mr. Alston for some very fine *Cœnuri* from bladdery rabbits; and to Mr. Shipley, M.R.C.V.S., of Great Yarmouth, for an unusually fine specimen of *Ligula*. Dr. Cobbold is also indebted to Mr. Clarke, of Cambridge, for some equine strongles (*S. tetracanthus*), a set of the same four-spined species having been forwarded by Mr. D. M. Storrar, of Sutton, Cheshire, taken from a two-year-old colt that had died of paralysis.

Texas Cattle.—An English company was formed last winter for the establishment of a line of livestock-steamers for the shipment of beef-cattle from Galveston, Texas, to British markets. The steamers, which have been fitted for the purpose of taking emigrants to Texas and cattle back to Great Britain, have commenced their trips, loading at Galveston with Texas cattle. In the Southern States the matter is directing attention to the possibilities of the future of cattle-raising in all that section, with a view to an increased demand from this new source.

Hydrophobia.—The military commission on hydrophobia, composed of military veterans either in active service or on half-pay, have written, through their president, M. Decroix, to the Institute of the Paris Academy of Medicine, and of the Central Society of Veterinary Surgery, to offer their services in experimentally testing all remedies for hydrophobia submitted to these bodies. A delegate from each or all of these bodies is invited to be present at the experiments. The remedies are administered to undoubtedly mad dogs, and not to dogs which have been bitten and are only suspected to be mad, amongst which there are four chances to one that they are not actually mad. At the present time the commission is making experiments on a remedy which is held to be so potent a specific against hydrophobia in Tonquin, that Monseigneur Gauthier, bishop of that country, has felt it to be his duty to send some to France.

THE VETERINARIAN, JULY 1, 1875.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

THE CHARTER OF THE ROYAL VETERINARY COLLEGE, AND THE REPRESENTATIVES OF THE PROFESSION.

AN event has occurred in connection with the obtainment of the Royal Charter of Incorporation of the Royal Veterinary College which requires to be recorded, if only as a fact of historical interest. Our readers are aware that the Council of the Royal College of Veterinary Surgeons asked for and obtained the insertion of certain words in two of the clauses of the draft Charter, for the purpose of protecting, as they supposed, the privileges of the profession of which they are representatives. On the draft thus amended being submitted to the Law Officers of the Crown, the interpolated words were struck out as being unnecessary, and the Governors were informed by the Lord President that the Lords of the Council were not prepared to submit the draft Charter for Her Majesty's approval without the omission of the words in question.

Under these circumstances the Governors determined to risk even the obtainment of the Charter, rather than break faith with the Royal College of Veterinary Surgeons; and immediately took steps, in common with the Council of the College, to have the words reinstated. In this they succeeded, and nothing more appeared to be necessary but to wait for the Charter, as now again amended, to receive, in due course, Her Majesty's approval.

A day or two before the annual meeting of the profession, information was received that the Charter was ready to be delivered; and on its coming to hand it was found that the words which should have been inserted in Clause 13, referring to the granting of the honour of Fellow or Licentiate to members of the Royal College of Veterinary Surgeons only, were omitted; while those in Clause 17, enacting that no bye-laws should be made which should interfere with rights already granted to the profession, were inserted.

The omission created the greatest possible surprise, and the

Governors at once commenced an inquiry as to the course which it was right to adopt to have the clause corrected, if such could possibly be done. Acting on the information received, the matter stood over until the day appointed for the formal reception of the Charter, viz. June 1st, when the President of the College, His Royal Highness the Duke of Cambridge, had arranged to take the chair. At that meeting, attention being officially drawn to the omission, the following Resolution was unanimously passed:

"That the Governors of the Royal Veterinary College have heard with regret that, through some irregularity among the officials of the Government, certain words for the insertion of which into the Charter the Royal College of Veterinary Surgeons applied, and to which the Governors by resolution consented, have been omitted from Clause 13 of the Charter of Incorporation. That the Governors of this Institution will seek the advice of the Law Officers of the Crown upon this matter, and are quite prepared to abide by their decision or advice."

A copy of this Resolution was at once sent to the President of the Royal College of Veterinary Surgeons, and on the same day—June 2nd—application was made at the Home Office for carrying out the terms of the Resolution. On June 3rd Messrs. Wilkinson and Sons, Solicitors of the College, received a letter from the Home Office asking for the Charter to be returned to the Office for examination. On June 7th Mr. Wilkinson wrote to the Treasurer of the College to the following effect:

"I have now seen the Clerk of the Patents, who informs me that it has been arranged at the Home Office, in the presence of Mr. Newdegate, and of Mr. Loch, the Solicitor of the Royal College of Veterinary Surgeons, that the words omitted in the Charter, but appearing in the Queen's warrant, which I have seen, shall be inserted in the Charter with a marginal explanatory reference and a resealing of the Charter to be certified by the Clerk of the Patents. I shall therefore be obliged by your intrusting the Charter to me to be thus amended."

On the following day the Charter was taken to the Home Office and immediately corrected, resealed, and returned to the custody of the Treasurer.

To these details we add two letters which will show how the mistake occurred and with whom it rests:

WHITEHALL; *June* 11*th*, 1875.

GENTLEMEN,—I am directed by Mr. Secretary Cross to transmit to you the copy of a letter from the Deputy Clerk of the Patents explaining that certain words had been accidentally omitted in engrossing the 13th Clause of the Royal Veterinary College Charter; that these words have been duly inserted therein, and that the Charter has been resealed.—I am, &c.,

(Signed) A. F. O. LIDDELL.

Messrs. Wilkinson and Son.

Great Seal Patent Office, Chancery Lane, W.C.;
June 10*th*, 1875.

Re the Royal Veterinary College Charter.

SIR,—The words accidentally omitted from Clause 13 in the engrossment of this Charter have been inserted, and the Charter has been resealed. The error appears to have occurred by reason of the words in question having been interlined in the Law Officers' draft, then struck through with the pen, and subsequently restored by a marginal note, which note apparently escaped the attention of the engrossing clerk and the examiners.

Permit me to express my regret at the occurrence and the trouble it has occasioned.—I am, &c.,

(Signed) HENRY ROBERT WHITE,
Deputy Clerk of the Patents.

The Under-Secretary, Home Office.

And now we may ask, on what grounds has the charge been brought by some of the members of the Council of the Royal College of Veterinary Surgeons against the Governors, or rather against ourselves in particular, of having, in collusion with the solicitors, procured the omission of the words from the Draft Charter?

We regret to have had such a proof of the verity of the statements contained in our leading article on the Incorporation of the Royal Veterinary College, published in our April number, "that the view taken by some members of the Council of the Royal College of Veterinary Surgeons with regard to the subject of the Charter was a contracted one, and ought never to have been entertained." Some persons would seem to have never learned the lesson that the statements of gentlemen are to be respected for their truth, and that coming from such a source they are to be received as being above suspicion.

We are accustomed to hear a great deal about our noble "profession," but lately we regret to have looked in vain for the exercise of noble principles in places where they should ever be found.

The reintroduction of the words in no way strengthens the principle on which the Charter was based, nor that in which its enactments would have been carried out.

One advantage does, however, arise from their reintroduction, and we hail this with the greatest satisfaction, not only for its own sake, but for the peace it will bring in its train. The power of the Governors with regard to the bestowment of the honour of "Honorary Associate" is now rendered clear. The Alma Mater can scatter broadcast this distinction, and we hope to see her using the power liberally. She is in this respect a University in the profession. Honorary Associates are not to be chosen merely from among those of the profession who were her own students. Scotch Professors and Members of each of the Scotch Schools are placed on the same footing as those of England. As time goes on, it will be more and more evident that a noble act has been accomplished by the Incorporation of the Royal Veterinary College.

CRUELTY TO ANIMALS IN TRANSIT.

Captain Stanley's letter to the *Times* on the subject of the treatment of foreign cattle landed at Deptford in some measure reopened the question of the proper method of conveying animals from the place where they are fed to the place where they are required for consumption. Without quoting any of Captain Stanley's statements, we may inform our readers that he simply described what ordinarily takes place in the transit of animals by sea and the landing of them at the various ports.

The animals in question were tied up by the head to the sides of the vessels, packed closely, kept without food or water, as they usually are in short voyages, and on arriving at the landing place were slung out of the hold by aid of the donkey engine, and dropped down rather roughly, as they usually

are the whole object being to get the cargo out as soon as possible, in order that the ship might continue her course and land her impatient passengers in London. Undoubtedly a considerable amount of force in the way of slinging, goading, and tail-twisting is used in moving animals from place to place. The fact can hardly be doubted; the real question is, who is to describe how much violence is necessary? It is all very well to say in reference to a prostrate bullock, "Let the poor brute alone;" but if the animal is in the way of the landing of the rest of the cargo, and if he is likely to remain in his obstructive attitude for some hours if left alone, will every body concerned wait patiently until the animal moves of his own accord? If not, is there any meaning in the expression of sympathy?

Knowing something of the hardships to which cattle are exposed in transit, we are not disposed to question the somewhat vague statement which is so commonly made to the effect that more attention should be given to their comfort; but we should like to see the point boldly put forth. How much comfort is to be provided and at whose expense? It is quite easy to determine how much space an animal requires to enable him to stand or lie down; there is no difficulty in providing food and water; concussion may be prevented or moderated by spring buffers on railway trucks, and by elastic partitions on shipboard of the sort invented by Mr. Benham, of Leadenhall street. Hatchways may be made sufficiently large to allow of the use of gangways, along which animals may walk, and thus escape the necessity of being slung up from the 'tween-deck or hold. All these necessaries are capable of being supplied at a calculable cost, which the consumer of meat will have to pay, and as soon as the meat-eating public makes up its mind that cattle, sheep, and pigs shall be comfortably carried by land and sea, at any cost, all difficulty will vanish.

There is no necessity for a Select Committee to take further evidence on the subject. The report of the Transit Committee which sat under the presidency of the late Sir Arthur Helps, in the latter part of 1869, contains a large amount of in-

formation on all points connected with the conveyance of animals by land and by sea, and all the regulations which the Committee felt justified in recommending, having regard to the number of interests involved, have been embodied in an Order of Council.

It is only uttering a truism to assert that no Acts of Parliament can compel men to act humanely towards the animals in their charge. Perhaps the time will come when drovers will come under the refining influences of education, in which case we may hope that they will cease to treat animals with reckless brutality. There is reason, also, to apprehend that in such cases they will cease to be drovers.

Extracts from British and Foreign Journals.

COBBOLD ON ECHINOCOCCUS DISEASE IN RELATION TO PUBLIC HEALTH.

Let any student, or, for that matter, let any medical man, seriously set himself the task of mastering the details of a hydatid disease, and I venture to think that, if he shonld eventually succeed, he will then be in a position to realise, for the first time, perhaps, in his life, the extraordinary part the entozoa, as a whole, are destined to play in the economy of life. He will certainly know something of the terrible havoc these creatures are capable of making amongst human and animal bearers alike; and possibly a question may at the same time enter his head as to how it happens that, notwithstanding the fatal power of the entozoa, no one ever hears of them in connection with the reports of the Registrar-General. From the negative aspect of our bills of mortality one might, as regards the entozoa, be led to imagine that these creatures are among the most harmless things in the world. Some of the facts brought forward below may possibly help to dispel that illusion.

The brief record which I communicated to the pages of the *Lancet* some years back had reference only to the *various kinds* of entozoa contained in certain museums of the metropolis, including one provincial collection; but, as expressly stated at the time, the report was only intended to be preliminary to others of a more complete and special character. I did, indeed, indulge the

hope of being able to visit all the chief museums in the British Isles, in view of obtaining statistical evidence in connexion with the distribution and prevalence of the entozoa. The labour, time, and expense involved in such an undertaking, however, prevented its accomplishment.

I have now personally examined upwards of a thousand separate preparations of entozoa contained in our public collections, and of these as many as 788 are preserved in the anatomical and pathological museums of the metropolis. By this careful inspection I have obtained more or less accurate knowledge of at least 200 unpublished cases of hydatid disease, at the same time acquiring much useful information respecting other parasites. In respect of hydatids, most of our museum shelves are more or less rich, and not a few of them exhibit specimens that are altogether unique. Of course the number of specimens in any given collection does not afford any true criterion of its relative value as an entozoal depôt, so to speak; nevertheless, as will be seen by the facts that I shall publish very shortly, certain of the collections are particularly strong in this respect, both numerically and otherwise. As a rule, each preparation refers to a single case only; but here and there two or more preparations are concerned in one and the same case. Several of the collections were repeatedly visited by me at intervals, and to some of them I have made considerable additions in the way of specimens. In many instances I took occasion, and generally with the approval of the respective curators, to correct errors that had very naturally crept into the catalogues.

After making the necessary deductions on the score of the uncertainty attaching to the true seat of the disease, I find I have to account for 192 separate cases of hydatids, as represented by the contents of our museums. If in the next place I add to these the 135 cases that I had previously placed on record from other sources, we shall obtain a total of 327 cases available for statistical purposes. If, yet further, an analysis of these cases be made and compared with the statistics already furnished by Davaine, from a rather larger number of examples, then, by reducing the whole to the lowest number of practically available terms, we shall at length obtain a result which, although it should be only approximatively correct, is nevertheless of great value and significance. The statistics stand as follows:

Organs affected.	T. S. C.	Davaine.	Total.
Liver	161	165	326
Abdomen, pelvic cavity, and spleen	45	26	71
Lungs	22	40	62
Kidney and bladder	23	30	53
Brain	22	20	42
Bones	16	17	31
Heart and pulmonary vessels	13	12	25
Miscellaneous	25	63	92
Grand total	327	373	700

Notwithstanding certain apparent differences, the statistics separately obtained by Davaine and myself show a remarkable correspondence. Thus, in the case of those organs respecting which no dispute could well arise as to the real seat of the disorder, the results are tolerably uniform. This is seen in the case of the liver, brain, heart, and bones. Even in those instances where our results do not appear to correspond, the explanation of the discrepancies is very simple. One example will suffice to illustrate this point. The twenty-six abdominal cases credited by me to Davaine's record are all placed by him under the heading of "Pelvis," whilst all those cases that I have myself placed under the abdominal series not only include hydatids of the pelvic cavity, but also two from the spleen and nineteen from the peritoneum and intestines, besides others. It would be wasting time to illustrate the matter further, but it is clear that if our methods of allocation had been precisely the same throughout, our statistical results would have maintained a still more marked degree of correspondence.

As the facts now stand (in the table above), much instruction may, I think, be derived from their consideration. I pray you to notice in particular the number of liver cases, comprising very nearly 44 per cent. of the entire series. Observe also the not inconsiderable number of cases in which the entozoon has taken up its abode in organs of vital importance. If statisticians would obtain an adequate conception of the fatal capabilities of parasites, they are bound to consider such data as are here afforded. Let us look a little closer into the matter. In 6 per cent. of all these cases the bladder-worm had found its way into the brain, and of course proved fatal to the patients; in about $3\frac{1}{2}$ per cent. more they took up their residence in the heart, also proving fatal; whilst of all the other cases put together I reckon that not less than 15 per cent. were concerned in bringing about the death of their hosts. You may be well assured, indeed, that I understate

the fatal capabilities of echinococcus disease when I express the conviction that hydatids prove fatal to 25 per cent. of all the human victims they attack. These data ought to have some interest for statisticians and officers of health.

It will, perhaps, be said that my tables and calculation alike afford no sort of notion as to the relative prevalence of the disorder in England in contrast with other endemic affections. Of course not. It has given me some months of labour to make out this much, or rather this little, and I am fully aware that a great deal more remains to be done; moreover, for the solution of subsidiary questions, additional data of another order must be procured. By the subsequent publication of the facts above alluded to in detail, my hope will be to throw light upon a subject which no one has as yet adequately handled from a sanitary point of view.—*Lancet*, June 9th.

PAULOWSKY ON THE COURSE OF THE FIBRES IN THE POSTERIOR COMMISSURE OF THE BRAIN.

In Siebold and Kölliker's *Zeitschrift für Wissenschaftliche Zoologie*, vol. xxiv, Heft 3 (September 16th, 1874), Dr. Paulowsky records the result of his investigations into the structure of the so-called posterior commissure of the brain. This body has been variously described; most authors, however, believing that its fibres run transversely between the two thalami optici, thus serving to connect the two hemispheres of the brain. According to Arnold, the commissure really consists of two factors, one of which belongs to the "Schleifenregion," the other to the hemispheres. [The "Schleife" answers to the *lemniscus* of Reil. The first factor probably answers to the commissure of Wernekinck.—*Rep.*] Luys has remarked a crossing of the nerve-fibres in the commissure. Meynert describes this structure as the crossing place of the anterior and posterior crura of the corpora quadrigemina, which, after crossing, pass over into the tegmentum ("Haube") of the crus cerebri. Besides this it is in communication with the pineal gland and the "ganglion trabeculæ."

Dr. Paulowsky made his observations on preparations from man, sheep, dogs, and rabbits. He arrives at the following conclusions:

1. The so-called posterior commissure consists of coarse fibres running down from the brain to the tegmentum of the crus cerebri.

2. These fibres have a fourfold origin—

(α) In the pineal gland;
(β) In the frontal lobe of the brain (through the anterior peduncle of the thalamus);
(γ) In the temporal lobe and in the fissure of Sylvius (through the inferior peduncle); and
(δ) Probably in the thalamus itself.

3. In the tegmentum one portion of the bundle of fibres runs with the "Schleife," while another lies to the inner side of the same.

4. Commissural, or bridge-like fibres, do not exist at all in the posterior commissure.

5. Therefore the term "commissura posterior" is an incorrect one, and it would be more advisable to call this region of the brain the crossed tract of the tegmentum—"tractus cruciatus tegmenti."—*London Medical Record.*

DR. LYON PLAYFAIR ON PUBLIC HEALTH AND VIVISECTION.

At King's College the Right Hon. Dr. Lyon Playfair, M.P., distributed the prizes to the successful students connected with the institution on June 3rd. Amongst those present were the Earl of Powis, Professor Bentley, Dean of Faculty; the Very Rev. Principal, Canon Barry; Sir William Fergusson, and most of the professors connected with the university. A few words of congratulation upon the fact of having so distinguished a man as Dr. Playfair in the Chair having been spoken by Canon Barry, the distribution of the prizes was effected, the right hon. gentleman saying a kindly word to each recipient.

The Chairman then rose, and was received with loud cheers. He said:—"Ladies and Gentlemen, I am sorry to say that it is now 35 years ago since I was a student of medicine in the sister college in Gower Street—that of the London University; but my feelings of sympathy for medical students have not deadened with age, and I can participate in your successes almost with the freshness of youth. Though I never qualified myself as a medical man, it is most agreeable to me to find on occasions like this that the medical profession keep up their fellowship with me. In fact, at the present time I happen to be President of the Section on State Medicine in the British Medical Association, and in this *quasi* medical capacity I propose to address you in reference to the benefits which the public may in future enjoy from the application of your knowledge to the pur-

poses of the State. (Cheers.) The connection of the State with medical men is very old, but it becomes strengthened as knowledge advances. How different now is the position of medicine from its condition when Governments applied to it for aid in cases of great epidemics in former centuries! When the French kings consulted the Medical Faculty of Paris what they should do to stop the great plagues which scourged France in the fourteenth century, the advice given was in the following words:—'If rain come during the day, a little fine treacle should be taken after dinner, and fat people should not sit in the sunshine.' (Loud laughter.) But long after that the medical profession was in a deplorable condition, both as to the causes of disease and necessarily, therefore, as to the remedies which should be used, and that was even during a period rendered illustrious to medicine by Sydenham. Do you happen to recollect the scene around the deathbed of Charles II? Fourteen physicians signed his prescriptions, and their collective wisdom determined that the head of the poor dying monarch should be burned with red hot irons—(cries of astonishment)—and they forced into his resisting mouth a loathsome volatile preparation extracted from human skulls. (Cries of "Oh!") What was the origin of this slow progress and helplessness of ancient medicine? It was that, in no offensive sense, a doctor was an empiric, groping his way by trial and error, and having no sun of science to illumine him in his dismal path. And so it was long before he attained to the true dignity of his profession. I recollect when I was a boy that a regular character in almost every play and farce was a pompous physician with his gold-headed cane. (Laughter.) He was the object of ridicule which unfeelingly appealed to the laughter of the vulgar. But this representation of the medical man has altogether disappeared from the stage—(hear, hear)—because now it would be incomprehensible. Its survival, I will presently show you, remains among us in a different form. But science has cast her mantle over the physician, and clothed him with honour. (Loud cheers.) There is not a single branch of medicine which is not now under the domain of science. (Cheers.) In fact, I know no class of men and no profession which has a more catholic kind of instruction than medical students. You are first obliged to show that you have received a liberal education by an examination before beginning your professional studies; and then you have a curriculum of abstract and applied sciences, the fault of which consists not in its narrowness, but possibly in its too great breadth. A medical man of

the present generation cannot be a narrow man. (Cheers.) His profession is too varied to render it possible for any member of it to see society only through monochromatic spectacles. And this renders the medical man both a power and a danger to society at large. Perhaps even more than the priest, the medical attendant becomes the confidant of the inner circle. His wide education and general knowledge often make him a valuable counsellor and friend when disease weakens the judgment and impairs the faculties of his patient. But this renders him a danger unless his conduct is guided by a high sense of honour. The code of honour which the profession has laid down for itself has been sufficient, with the rarest exceptions, to preserve it unstained in its relations with society. (Cheers.) Nevertheless, a reaction against the medical man naturally arises both in the discharge of his private and public duties. The patient who is doomed to passive obedience when he is ill is apt to show his independence, and sometimes suspicion, of his medical adviser when he is comparatively well. This feeling, which has only a subdued expression in individuals, becomes magnified into positive dislike of the medical profession in its relations to the body politic. For the public officer of health has to deal with the body politic just as the private physician has to deal with the body of an individual. As the private doctor has to consider the hereditary transmission of disease to his patient, has to look to the conditions of his up-bringing, and of the conditions, both physical and moral, to which he has been exposed, so must a public-health officer look to all such conditions as affecting a community, for that represents the sum of all the moments of health of the individuals composing it. In fact, in a state each individual represents a single living particle in a man. (Hear, hear.) Nutrition consists in the waste and restoration of particles. So in a state the death of a man and the birth of another are strictly analogous to the waste and restoration of particles in individuals. When the rate of mortality is high in a community disease is indicated, just as abnormal waste in an individual leads you to look for the causes of disease, and thus it happens that each community has been forced to have its own public officer of health, just as each individual requires to have his own doctor. But the public officer of health comes in contact with the aggregate suspicion and resentment of the community of which I have spoken. He is too much a man of science to be treated with ridicule as in ancient times—(hear, hear)—but the survival of this antagonism of the strength of health to the weakness of disease still exists,

and is vented on the public-health officer in a manner which would be amusing if it were not irritating. This is constantly seen in the House of Commons. Every bill relating to sanitary matters which is introduced more and more throws power and responsibility on the public officer of health. In some cases, as in the Dwellings of the Poor Bill, he is made the motive power of the whole measure. But each new confidence is bestowed under protest, and is yielded after much show of suspicion. If you were to believe the speeches which are made, medical men, instead of being the saviours of humanity, are the enemies of mankind. (Laughter.) The country is determined not to be ruled by them, and yet it is continually bestowing upon them increased power. What does all this mean? Simply that the communities are acting like individual patients. They try to resist the admission that they are in a state which requires an abnegation of their own will, and a submission to the orders of their medical adviser. (Cheers.) They kick against the need, but yield while they kick. And so you find everywhere, very unequally and with many misgivings, all communities appointing their own public doctors, just as individuals select their own private physicians. For the future this will be a great field open to growing medical men. By prudence and honesty of purpose they will overcome the prejudices that now exist to their public employment. Your education as a private practitioner must, however, be supplemented by further knowledge for the discharge of public duties, because these require a special application of general knowledge which is gradually developing itself into a special division of medical practice. This has naturally been created by the unselfish labours of many medical men, even while engaged in the arduous duties of private practice. (Cheers.) As an illustration of this fact, take the instance of Dr. Budd, of Bristol, who has given to public health so much valuable experience as to the conditions under which epidemics spread. (Cheers.) As long ago as 1845 I made Dr. Budd's acquaintance, while examining into the state of Bristol as a Royal Commissioner on public health, and ever since I have followed with interest his many researches and memoirs on the origin and spread of epidemics. His own health, unhappily, broke down in his labours to promote the health of communities, just as that of Dr. Rumsey, of Cheltenham, has given way under like conditions of public usefulness. Surely such instances as these ought to be sufficient answers to the unreasoning suspicions of the influence of medical men on public affairs. (Loud cheers.) Can there be an example of more unselfish

labours than the effort of a medical man to extirpate disease, on the very existence of which his daily bread depends? And yet who is the man in each district who wars against filth, that forms the soil in which a large class of diseases take root? Sometimes there is a fine muscular Christian—such as Charles Kingsley was—who uses his priestly influence to combat the filthy habits of his people as a means of promoting health; but far more frequently it is the doctor, and not the priest of the parish, who has to incur the odium of reforming local abuses. (Prolonged cheers.) Read Kingsley's novel called "Two Years Ago," and you will find this fact excellently illustrated by himself. Every medical man, however much he may be engaged in private practice, can be a sanitary missionary, acting for the prevention as well as for the cure of disease. (Hear, hear.) The different methods of disease-propagation are becoming better studied, and unsuspected sources of diffusion are now known to be among the most common vehicles of transmission. Extensive epidemics, which, in ancient times, would have been attributed to occult influences, are now traced to polluted water and tainted milk. (Hear, hear.) The great Sydenham, sagacious as he was, did not look around him, but beneath him, for the origin of epidemics. He thought that they emanated from the bowels of the earth—from the *interiora terræ viscera*. But now we have learned by closer observation to find their origin in our immediate surroundings. The physician has two duties in each case of communicable disease. He has to cure the patient, trace the origin of the disease, and prevent its recurrence among others. This is a noble and an unselfish duty, and in its performance will disappear those relicts of prejudice against the medical profession which linger in society. What utter unreasonableness there is at the present moment in the manner in which the crusade against vivisection is carried on! (Loud cheers.) That there has been unnecessary indifference to animal suffering in the experiments made on living animals—especially in foreign countries—is no doubt true. And the truth justified attempts at legislation, so as to conduct experiments with the view of obtaining the scientific object of investigation in the most humane manner. In concert with Darwin, Huxley, Burdon Sanderson, and others, I tried to frame a code of morals which might be accepted by physiologists as an example of the manner in which such experiments should be conducted. For I fully recognise the fact that the law would be powerless to restrain such operations, if it were so severe or unreasonable as to drive the operators to perform them in

privacy. (Loud cheers from the students.) No system of inspection or registration would enable the law to discover individual experiments performed in private if it were the interest of the experimenters to conceal them. If the law for restraint of cruelty is to be operative it must be so fair and reasonable as to enlist the sympathies and co-operation of humane men of science. (Cheers.) Without this you might as well expect an experimentalist to publish the contortions of a frog under the scapel, as you would expect the keen fisherman to tell the Society for the Prevention of Cruelty to Animals how a frog writhed when placed on a hook in order to catch a pike. (Cheers and laughter.) But a reasonable law to regulate the conduct of such experiments would be accepted as a guide, and would find co-operators in the experimenters. It would do more; because the community of science is great, and a law which did not obstruct science and still prevented cruelty in its pursuit would soon be accepted by foreign nations. The very power which we possess over the lower animals involves a responsibility in its exercise. (Hear, hear.) It is no justification of the voluntary infliction of animal suffering that nature itself is cruel, and that the support of life is incident to death and suffering. If the suffering which we are compelled to inflict on animals daily and hourly were, as it probably is, a hundred or a thousand times greater than the physiologist ever perpetrates, that does not lessen his responsibility to avoid the deliberate infliction of pain in the prosecution of his researches. His very knowledge of the structure of animals is an additional reason for applying his skill to avoid the unnecessary production of pain when the progress of science gives to him the means of carrying out painless operations. I need scarcely say that I do not agree with those who would prohibit vivisection even for the purposes of scientific investigation. Medicine is no longer confined to the record of symptoms and to the trials of medicines to alleviate them. The investigation of vital phenomena by observation and experiment is rendering medicine a science which, like all other sciences, requires a direct and careful questioning of nature. It would be disastrous to the progress of medicine if we were to restrict the means of research in the sciences of anatomy, physiology, and even chemistry, by refusing to discoverers in these sciences the power to test their discoveries on living organisms. It is a mean view of scientific progress always to put the *cui bono* test to every experiment, though every discovery, however remote may appear its practical application, becomes ultimately beneficial to man. Harvey had higher objects than

the practice of medicine in discovering the circulation of the blood. Haller inquired into the nervous system, not with a view to the mere cure of disease, and was followed by Bell, Marshall Hall, Weber, Bernard, Brown-Séquard, and many physiologists in a spirit of abstract philosophical inquiry, though all their experiments have ultimately reflected great benefit on the human race. The suffering and death which they inflicted on the lower animals in their researches have, like the sacrifices of old, brought collateral benefits to humanity. It is not in the mere direct applications of such experiments to the cure of disease, as when Jenner vivisected animals to produce vaccination, that the benefit of such experiments is the greatest. These are immediate and palpable benefits which come home to the vulgar. But the widening of the boundaries of knowledge always produces increased powers of happiness to the human race. It is right, in my opinion, that experiments leading to such important results should be pursued, even at the sacrifice of a certain number of lower animals. (Loud cheers.) But no suffering and no sacrifice should be made without justification. The very fact that the ultimate consequences of such researches lessen the amount of human suffering by teaching us how to alleviate disease, renders it more imperative that all the resources which modern science has placed at our disposal for the mitigation of pain should be used in experiments on the lower animals. (Cheers.) It is fortunate, then, that in the agitation of the public mind on the subject, nothing precipitate has yet been done, and that a Royal Commission, which is likely to be presided over by a very humane, but at the same time prudent and sagacious nobleman, who fully appreciates science—Lord Cardwell—(loud cheers)—is appointed to inquire into the whole subject. But I find that I have been giving you somewhat of a parliamentary speech—(laughter)—and so I must conclude. In taking leave of you I congratulate all the students of this important medical school in the choice of their profession. It is one in which they may be eminently useful to their fellow-men and in this feeling of usefulness, through intelligent labour, they will find their highest and purest enjoyment. I have tried to show you that your knowledge may be made to extend benefit far beyond your immediate patients, for a physician should look upon medicine as a sort of religion, and he himself as a priest of humanity, bound to spread his sphere of usefulness to all within his range."

When the right hon. gentleman resumed his seat, there were loud and prolonged cheers.

The Earl of Powis moved, and *Canon Barry* seconded, a vote of thanks to Dr. Lyon Playfair for presiding upon the occasion, and this being carried amid loud cheers, the meeting separated.

Analysis of Continental Journals.

By G. Fleming, M.R.C.V.S., Royal Engineers.

CONTAGIOUS PLEURO-PNEUMONIA IN HOLLAND SINCE THE ADOPTION OF GOVERNMENT INSPECTION.

Janné, district veterinary inspector charged with the duty of carrying out the veterinary police measures in the Duchy of Limbourg, Holland, in continuation of the summary he gave of the progress of contagious pleuro-pneumonia in that country since the organization of a veterinary police system in 1872, gives, in the *Annales de Médecine Vétérinaire* for January, 1874, further information as to the results obtained from the operation of the sanitary measures adopted and rigorously enforced. This he has been enabled to do from the official report which has been elaborately and carefully drawn up by the Minister of the Interior.* Tables showing the distribution of the disease in the different communes and provinces, with its increase and decrease at different periods during 1871 to 1873, accompany this communication. These tables we omit, as being of no particular interest to us, and content ourselves with the remark that in 1872 there were 4008 cases of the disease in the kingdom; but in 1873 there were only 2479: being a decrease of 1529. The tables show a very marked diminution in the majority of the provinces, but a recrudescence of the scourge in Friesland; they also exhibit a reduction in the distribution of the malady, the extent of its depredations having become considerably limited.

On November 13, 1872, the slaughter of all suspected cattle was rendered obligatory, unless they had been inoculated within eight days of suspicion. The latter alternative was generally preferred by breeders and graziers to that of slaughter, except in Friesland, where occision was accepted. Therefore it was that, from January 21, 1873, it was ordered that all the suspected animals in that province were to be immediately destroyed. After a few weeks, however, it was

* Verslag aan den Konig van de bevindingen en handelingen van het Veeartsenijkundig Staatstoezicht in het jaar 1873.

discovered that the advantages to be derived from this measure were not at all in proportion to the expenses incurred. The sum of 350,000 florins allowed by Article 61, Chapter V, of the budget to defray the cost of suppressing contagious diseases, was almost expended at the beginning of April; while the cases of pleuro-pneumonia were not sufficiently diminished to lead to any hope that the contagion would be quenched. The sacrifices that the State would have been called upon to make if it persisted in enforcing this measure must soon have become so onerous that the Minister could not take upon himself the responsibility of continuing it any longer. It was therefore suspended. By virtue of the law of June 17, the amount specified in Article 61 of Chapter V of the Budget was therefore increased by 300,000 florins; and at the discussion of this law in the Second Chamber of the *Etats généraux*, it was clearly obvious that the majority of the members of the assembly were not favorable to the slaughter of cattle suspected of pleuro-pneumonia. It was evident, also, that most of the deputies would have refused their assent to the passing of the Article if the money was to be applied in this way. Nevertheless, the Minister reserved to himself the power of ordering occision in special cases: when, for instance, it broke out in localities where it had not before appeared.

This eventuality occurred but rarely: the first time at Beilen, in the province of Drenthe; and another time at Ooltgensplaat, in that of South Holland.

The summary relating the progress of the epizoöty shows that, though in general the number of affected animals progressively diminished, yet that this diminution did not occur everywhere to an equal extent. Apart from those provinces where only isolated cases of pleuro-pneumonia were observed, it was at first in North Holland, than in the province of Utrecht, that the decrease was most marked. In consequence of the new extension that the malady had assumed in South Holland, the cases there were nearly as frequent as in 1872; in Westland, and more recently in the north-west of the province, the breeders neglected to report these outbreaks, and on each occasion this omission was the cause of the recrudescence of the disease. As soon as this fraud was discovered and the law was put rigorously into force, the cases of pleuro-pneumonia diminished so rapidly during the last months of the year that they were very much below that reported for the same months of the preceding year.

It was only in Friesland that the situation was least favorable. The number of diseased animals was as high in that

province as in 1872. The south-west part was the focus of the epizoöty, and especially the communes of Wymbritserdael and Wonserdael; from these, on different occasions, the contagion extended to the other communes.

The numerous herds in these regions, and the difficulties encountered when it was attempted to isolate suspected animals in the pastures, were probably the reasons why such an unsatisfactory state of things was maintained.

As Friesland sends many cattle to other parts of the kingdom, and particularly to the two provinces of Holland, it also became a centre of infection for South Holland. In the latter province, in fact, the disease appeared repeatedly among the *Frison* cattle which had been purchased in the North Holland markets. These, to all appearance in the soundest health when brought, sickened after a few weeks; and each time this occurred, of course there was a recrudescence of the epizoöty in the different parts of South Holland where they were lodged. It would therefore appear that, in consequence of the defective isolation of suspected cattle, these had, previous to importation, become contaminated in the pastures, and had left before the early symptoms of the disease had time to be developed.

It therefore became necessary to discover some means by which to rigorously oppose an evil that seriously threatened to compromise the beneficial results of the measures directed against the extension of the epizoöty. This means appeared to be comprised in the restriction that should be imposed upon the communication of cattle with each other in localities most infected with the contagium. The entrance and the exit of animals to and from the centres of contagion, once prohibited and thoroughly carried out, it must follow that the indemnified localities would remain free from the disease. But it was easier to decree this prohibition than to find the means of carrying it out. Military *cordons*, such as had been established during the cattle plague in 1866 and 1867, were a very expensive measure, the inutility of which at that period was proved beyond all doubt. The movement of cattle through the *cordons* could not be stopped, and there were breeders who boasted that they could pass as many cattle through the sanitary lines as they liked. The difficulty of seizing these law-breakers in the act—for this was necessary in order to convict them—was one of the reasons which rendered this measure entirely illusory.

It was then necessary to devise some means of discovering and pursuing the contraveners of the law, even after they had committed the offence.

The measure which appeared most likely to prove efficient in this direction, was the general enumeration of the stock in all localities where the entrance and exit of cattle were prohibited; the necessary control being carried out by means of a weekly inspection conducted by special experts. Every illegal mutation in the numerical list of the animals should be an undoubted proof of the slightest infringement, having taken place. These propositions were made the basis of a law which received the royal sanction on October 3, 1873.

(*To be continued.*)

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF COUNCIL, HELD MAY 25TH, 1875.

Present.—Professors Simonds, Pritchard, Axe; Messrs. Dray, Field, Harpley, Talbot, Hunt, Greaves, Fleming, Moore, Cartledge, Balls, Broad, Woodger, Col. Sir F. Fitzwygram, and the Secretary.

On the motion of Mr. Harpley, seconded by Mr. Balls, Mr. Dray took the Chair.

The Secretary read the notice convening the meeting.

The minutes of last meeting were read and approved.

In answer to Mr. Moore, *the Secretary* stated that the cause of Mr. H. Wilkinson's absence from the examinations was indisposition, and that Mr. Wilkinson, of Woolwich, had officiated in his stead.

Letters were received from Professor Simonds, Messrs. Dray, Broad, and Balls, acknowledging the honour of their re-election as members of Council.

Election of President.

Mr. Harpley proposed Col. Sir F. Fitzwygram as President for the ensuing year. He was, he thought, competent to carry out the duties of President in a way that probably no one at the present time could do. He had great pleasure in proposing him, because he was not only a friend to the Scotch Schools, but also to the London School.

Professor Simonds, in seconding the motion, said that without assigning the same reasons which Mr. Harpley had for Col. Fitzwygram's election, he thought the Council would only be doing that which was right under existing circumstances in electing Col. Fitzwygram to the office of President.

On the ballot being taken, Col. Sir. F. Fitzwygram was declared unanimously elected.

Col. Fitzwygram briefly returned thanks for the honour done to him, and assumed the Chairmanship of the meeting.

Election of Vice-Presidents.

The following gentlemen were nominated to fill the six vacant offices of Vice-President :—

Mr. M. E. Naylor,	proposed by	Mr. Coates.
Mr. S. H. Withers,	„	Mr. Broad.
Mr. Fredk. Mavor,	„	Mr. Dray.
Mr. McCall,	„	Mr. Cartledge.
Mr. T. W. Mayer,	„	Mr. Dray.
Mr. H. J. Cartwright,	„	Mr. Field.
Mr. G. A. Lepper,	„	Mr. Broad.
Mr. Helmore,	„	Mr. Moore.
Mr. John Lawson,	„	Mr. Fleming.
Mr. Cope,	„	Prof. Simonds.
Mr. Barrow,	„	Mr. Balls.
Mr. Carliss,	„	Mr. Pritchard.

On the ballot being taken, the following gentlemen were declared elected :—Messrs. Withers, McCall, Mayer, Cartwright, Lepper, and Lawson.

On the motion of *Mr. Harpley,*

Mr. Withers was proposed to be re-elected Treasurer.

On the ballot being taken, Mr. Withers was declared to be unanimously elected.

On the motion of *Mr. Broad,*

Mr. Coates was proposed to be re-elected Secretary.

On the ballot being taken, Mr. Coates was declared unanimously re-elected.

This finished the business of the first Special Meeting.

A second Special Meeting was held immediately afterwards for the purpose of electing another Examiner in the room of Dr. Sharpey, resigned, to receive the report on the Fitzwygram Prizes, and other business.

Before entering upon the business of the meeting,

The Secretary called attention to the death of one of the oldest and most distinguished members of the profession, the late Mr. William Burley, of Leicester, and asked that a letter of condolence be sent to the family.

On the motion of *Mr. Dray,* seconded by *Professor Pritchard,* this was agreed to.

The following letter was received from Dr. Sharpey, withdrawing from the office of Examiner :

50, Torrington Square;
May 6th, 1875.

My dear Mr. Coates,

I request that you will kindly intimate to the President and Council of the Royal College of Veterinary Surgeons that I now withdraw from the office of Examiner, with which they have so long honoured me.

In taking this step I look back with most agreeable feelings to the friendly and instructive intercourse I have enjoyed with the gentlemen with whom I have been associated in discharging the duties of my appointment.

With earnest wishes for the continued prosperity of the two Colleges, and in the confident hope that their well-directed efforts to improve the qualifications of the young men entering the veterinary profession will be crowned with success,

I remain, my dear Mr. Coates,
With much esteem,
Yours sincerely,
W. Sharpey.

W. H. Coates, Secretary,
Royal College of Veterinary Surgeons.

The letter was ordered to be entered on the minutes.

The Secretary stated that, having an impression from Dr. Sharpey that Mr. St. Mivart would be eligible for the vacancy, and as his name had already been brought forward before the Council, he wrote to Dr. Sharpey on the subject, who answered to the effect that a more experienced physiologist should be chosen to succeed him. He then wrote to Dr. Taylor, chairman of the Board of Examiners, who recommended either Professor Huxley or Dr. Pavy to fill the appointment. Professor Huxley, he added, was well acquainted with comparative anatomy, and Dr. Pavy had experimented on animals for many years, and would make a good Examiner, if Professor Huxley could not be induced to take the appointment." Professor Huxley, however, had been waited upon, and had declined to accept the appointment owing to his numerous engagements; and Dr. Pavy had replied to the effect that he would be willing to undertake the duties if elected.

Mr. Fleming moved that Dr. Sharpey's resignation be accepted, and that a letter of thanks be returned to him for his long and valuable services to the Royal College of Veterinary Surgeons, and especially forthe very prominent part he had taken in the examination of the students. He thought that Dr. Sharpey was one of the best friends the Examining Board had ever had; and he must confess that, having examined with him at the same

table for the last two or three years, that he was one of the best examiners he had ever met with, and he was sure that his resignation would be accepted by the profession with very much regret. He should also like to add to the motion that the Royal College is extremely sorry to learn that the cause of his resignation is the present affliction with which he is affected.

The motion was seconded by *Professor Pritchard*, and carried by acclamation.

Professor Simonds said that, having been associated with Dr. Pavy a few years ago in some investigations, he was inclined to think he would make an excellent Examiner in the room of Dr. Sharpey. He had much pleasure, therefore, in proposing Dr. Pavy as successor to Dr. Sharpey.

Mr. Dray seconded.

Mr. Fleming said he begged to propose Dr. Burdon Sanderson as being one of the first physiologists in Europe, and as one who had made the diseases of animals a special branch of study. He had mentioned his name against that of Dr. Pavy because he only knew Dr. Pavy in his researches on the stomach of animals with regard to digestion; otherwise he did not think he was known in connection with the physiology of the lower animals. It was most important that a man who makes the physiology of animals his special study should be appointed as an Examiner. A human physiologist, he thought, was rather out of place.

Mr. Hunt seconded the motion.

On the ballot being taken Dr. Burdon Sanderson was declared duly elected.

Correspondence.

Letter was received from Mr. George Mould, a candidate for re-examination, requesting information respecting it.

The Secretary intimated that the required information had been furnished.

Letter from Mr. Wren, wishing to be informed whether Joseph Hutchin was a member of the Royal College of Veterinary Surgeons, he having represented that he passed in Edinburgh at the last meeting of the Board of Examiners.

He was informed by the Secretary that he was not a member, he having only passed his "First Examination" in December last.

Letter from Mr. Dyer, of Limerick, stating that Hugh O'Connor, of Limerick, had been showing a diploma, and wishing to know if it was not a forged one.

He was informed that there was no person of the name of Hugh O'Connor on the register, and that no person of that name had obtained a diploma.

The Secretary read the following report of the examinations for the Fitzwygram prizes:

The Examination for the Fitzwygram Prizes.

The Fitzwygram prizes of fifty guineas, thirty guineas, and twenty guineas, having been announced for competition to the students of the different veterinary schools,

Dr. James Dunsmure, jun., of Edinburgh, and the Secretary of the Royal College of Veterinary Surgeons, were appointed superintendents for carrying out the examination, which took place in London and Edinburgh on April 19th and 20th.

The Secretary has to report that arrangements were made and circulars issued to those students of the London Veterinary College who had recently obtained the diploma of the Royal College of Veterinary Surgeons, informing them that they were eligible to compete for the above prizes.

Several letters were received in reply, complaining that earlier intimation had not been given them of the intended competition.

The Principal of the Glasgow school stated that he had no students eligible to compete for the prizes.

Twenty candidates from the London and Edinburgh veterinary schools entered their names as competitors for the above prizes.

Of these, seven students from the Edinburgh school were excluded in consequence of being too late in attendance. Three students from the new Edinburgh school retired. Three students from the London Veterinary School did not appear, and one refused to compete in consequence of being an hour and a quarter late.

The competition was thus left open to three candidates from the London Veterinary College and three from the New Veterinary College, Edinburgh. One of the competitors from the Royal Veterinary College retired while the examination was going on.

In reference to the obtainment of marks, 1200 were allotted to the written examination, and 600 to the *vivâ voce* one.

The rule for the guidance of Examiners was, that any candidate failing to obtain half the number of marks assigned to any paper was excluded from the *vivâ voce* examination.

The following is the result, and the number of marks obtained by each competitor:

THE LONDON VETERINARY COLLEGE.

	Anatomy. 300	Physiology. 300	Pathology. 300	Chemistry. 150	Botany and Materia Medica. 150
George Wm. Carter	199	114	145	Nil	Nil
John Henry Steel	204	215	200	134	54
Thos. Robt. Williams	158	135	175	103	10

THE EDINBURGH VETERINARY COLLEGE.

Thomas Flintoff .	157	116	135	40	Nil	28
William Barnes .	203	142	160	84	12	40
Robert Moore .	120	85	175	66	20	25

The only competitor who obtained the average number of marks in this division of the examination was Mr. John Henry Steel, of the London Veterinary College, and he was consequently eligible for the *vivâ voce* examination.

This examination was conducted under the following heads, and the total number of marks assigned was as follows:—

	Marks assigned.	Marks obtained.
Diagnosis of Disease	200	180
Shoeing	100	75
Examination for Soundness	200	160
Selection of Horses for specific purposes	100	100

The report of this examination stated that the practical examination reached a much higher standard of proficiency than the written one.

The final result was that Mr. John Henry Steel, of the London Veterinary College, was awarded the sum of fifty guineas, the first prize, and his travelling expenses.

Professor Simonds submitted to the Council the name of Mr. W. S. Boswell, a veterinary surgeon from Canada, who had come over to England for the purpose of becoming a member of the Royal College of Veterinary Surgeons, and who is at the present time in attendance at the Royal Veterinary College. He brought with him a letter of recommendation from Mr. Andrew Smith, Professor of the College at Toronto, stating that he was a veterinary surgeon and a graduate of the Ontario Veterinary College, that he had attended three sessions of that College, and had also seen considerable practice, but, being desirous of still further prosecuting his studies, he had come to England with the intention of spending some time at the London College, in order that he might become a member of the Royal College of Veterinary Surgeons. The letter further stated that Mr. Boswell was the first of the students who had gone to England with the view of graduating, and that some years ago Professor Buckland, of the University College at Toronto, called on the late Professor Spooner, and arranged that candidates of this description would be eligible for gaining the diploma of the Royal College of Veterinary Surgeons after attending one session at the London or Edinburgh College. He (Professor Simonds) believed that, according to the existing bye-laws, Mr. Boswell would have to be put on the same level as a youth coming from school. It was a case where something should be done on the part of the Council to meet the difficulty with regard to students

that were placed in the same position as Mr. Boswell was. He would leave the matter in the hands of the Council, and would merely say that at a meeting of the Governors of the Royal Veterinary College, on Saturday last, it was resolved "that Mr. Boswell be allowed to attend the lectures in the College pending arrangements to be made with the Royal College of Veterinary Surgeons."

Mr. Harpley asked what would happen if a similar case occurred in the medical profession? If a medical man had obtained a diploma at the College of Montreal, and was introduced to this country, what would be the steps taken by the Royal College of Surgeons in England, or any of the educational establishments?

Professor Simonds said that he could not answer the question, but he did not think the Council ought to be guided by what other people did. They ought to legislate for themselves and for the benefit of the profession.

Mr. Moore called attention to the fact that the Universities in England and Scotland granted their diplomas without studying at all, provided they took their certificates from the one College to the other; and he did not see why the Council should not do the same in this case.

Professor Simonds said that Mr. Boswell was in attendance at the College now, and would be there the whole of the summer session. He would also be content to pass the next winter session if he was admitted to the examination in April next.

Mr. Cartledge did not see what possible objection there could be. He should be eligible for examination within a reasonable time. He proposed—

"That Mr. Boswell be eligible for passing his examination."

Mr. Broad seconded the motion.

Mr. Fleming asked if this would not be infringing the bye-law.

Professor Simonds said the better way would be to suspend the bye-law for the first examination, so that he might be enabled to go up for his pass-examination. If that were done the Council would be saved the expense of calling the whole Court together to examine him.

Mr. Fleming said that some three or four years ago Mr. Clayton came from France, and only studied for one session.

Professor Simonds.—Only a few weeks, and you admitted him.

Mr. Hunt said the Council were not aware of the constitution of the Ontario Board of Examiners, and the only way to measure their capabilities was by the strictness of their own examination.

Professor Simonds said he knew nothing about the constitution of the Ontario Board. All he knew was that Mr. Boswell had

been at the Toronto school, that he was a man approaching middle age, and was evidently very studious, and as desirous as a man could possibly be of obtaining a thorough knowledge of his profession. His ambition was to be a member of the Royal College of Veterinary Surgeons.

Mr. Harpley said he did not wish to oppose this gentleman coming up for examination, but as this might not be the last case that would come before the Council it would be better to have some understanding to guide them in future cases. If this gentleman was to come up at the next April examination, let it be so understood; but, at the same time, he must do nothing to interfere with the bye-laws, and his case should not be made a precedent for future regulations.

Professor Simonds remarked that such a case might differ somewhat, and all that they could do in this case was to suspend the bye-law calling for an examination in December.

The Secretary asked what examining fee Mr. Boswell would have to pay.

It was agreed that the ordinary examination fees be charged.

The President thought that the suspension of the bye-laws should be avoided as much as possible; and although it might be done in this particular instance, he thought it would be desirable to appoint a committee to take into consideration the general question as to the terms on which the foreign students should be allowed to pass. He had been for a time in Canada, but had never heard of the existence of the Ontario school. He thought the Council should ascertain whether it was a recognised State school, or whether it was not a mere private adventure. That information, he imagined, could be found out from the Colonial Office.

Mr. Hunt said he could obtain some private information on the subject, and would place it at the disposal of the Council when he received it.

The President suggested that to Mr. Cartledge's motion should be added the words "provided the certificates were satisfactory."

The motion, with the proposed addition, was put to the meeting and carried unanimously.

Mr. Field proposed that a committee be appointed to inquire into the general question as to the terms on which foreign students should be allowed to pass.

Mr. Fleming seconded the motion, which was carried unanimously.

On the motion of *Mr. Hunt,* seconded by *Mr. Dray,* the President (ex officio), and Messrs. Simonds, Field, Harpley, and Fleming were appointed members of the Committee.

The Charter to the Royal Veterinary College.

The Secretary read a letter dated 21st May from Loch and Maclaurin requesting to see the Secretary at his earliest convenience.

The Secretary stated that on the 22nd he waited upon Mr. Loch, who informed him that he understood from Mr. Harpley that the Charter of Incorporation had been granted to the Royal Veterinary College without the words proposed by the Royal College of Veterinary Surgeons being inserted to guard their interests. Acting upon this information they called at the Privy Council Office and ascertained that the Charter left the Council Office with the words inserted. Subsequently they were referred to the Home Office and received the same reply there. Mr. Loch stated that if any blunder had occurred it must have been at the Attorney General's Office. He, therefore, asked the Secretary to wait upon Mr. Wilkinson to obtain a reprint of the Charter of Incorporation, and to ask whether the words which the Council required had been inserted in the Charter. The Secretary did so, and his reply was that the words were so inserted in the last copy of the Charter as sent in to the Government. On the Charter being received by the Governors, it was found that in one clause the words had been omitted; but that in the other, guarding the interests of the Royal College of Veterinary Surgeons, they had been inserted. He stated that copies of the Charter were being printed, but that he had no copy of them, and referred him to Professor Simonds. He (the Secretary) then wrote to that effect to Mr. Loch and gave him the information asked.

In answer to *Mr. Hunt*,

The Secretary said that the Council were not in possession of one of the copies.

Professor Simonds stated that he promised the President a copy of the Charter as soon as it was printed, after it had been compared with the Charter itself. He fulfilled his promise to the letter. He had only twelve copies for the Governors and the ordinary Committee, and he forwarded one of these to the President. He subsequently discovered that there was an error in two names. He had consequently to have all these copies destroyed. Of the whole 500 one half sheet had to be reprinted, and he could only get them yesterday, and when he did he sent the President a copy.

Mr. Dray stated that he had received a corrected copy from Professor Simonds. He explained that at the Annual Meeting he assured those present that the clauses as altered were inserted, and he conscientiously thought so, else he should not have made

such a statement; but he acted under the representations made to the Council by the Parliamentary agents.

Mr. Harpley explained that he had called upon Loch and Maclaurin to see whether the Secretary had obtained a copy of the Charter, or whether the saving clauses had been inserted. He could not get any further information than what was given at the Annual Meeting. Mr. Loch was startled to hear that the clauses had not been put in, and so anxious was he that they should be put right that he called with him at the Home Office and saw a clerk there, who stated that the Attorney General left orders that the proposed alterations should be inserted in Clauses 13 and 17. He also assured them that when the Charter left his office it had the clauses complete in the amended form. The Charter came from the Privy Council Office to the Home Office for registration, and left the Home Office intact; and if any mistake occurred it must have been on the part of the engrossing clerk at the Attorney General's office, and they were referred to the Attorney General's office for further information; but unfortunately the engrossing clerk was from home, and therefore they could not follow up their efforts to ascertain where this omission had taken place. Mr. Loch was so anxious that the matter should be at rest that he told him he would write to Mr. Coates to say that he (Mr. Harpley) had raised a doubt as to whether the saving clause had been inserted, and he considered that Mr. Coates should have at once taken action in the matter. As nothing appeared to have been finally settled in the matter as far as the Royal College was concerned, he should move that the President be asked to carry on this investigation, and to ascertain how it was and where it was the omission had occurred; because he still thought that there was an infringement upon the Charter granted to the Royal College of Veterinary Surgeons many years ago. He thought that Clause 13 had left a loophole which even the Governors themselves did not desire; and so anxious was he for the sake of the profession that the matter should go on that he should not rest satisfied unless he should have some intimation that would relieve his mind on the subject, or until the question was asked in the House of Commons; and he should take care that that question should be put if he could not have a satisfactory answer. He would ask Professor Simonds, "Is it the intention of the Governors of your institution to appoint licentiates at once, previously to your students obtaining the diploma of the Royal College?"

Professor Simonds said he could not answer the question until the Annual Meeting was held and action had been taken under the Charter with regard to the framing of the bye-laws. He knew, however, that the principle which would actuate the

Governors in the framing of the bye-laws would be that they would not conflict with the interests of the Royal College of Veterinary Surgeons.

Mr. Harpley said it was only due to the Royal Veterinary College and the Royal College of Veterinary Surgeons that every inquiry should be made. He concluded with a motion to the effect that "The President be requested to continue the investigations into the matter."

Mr. Field seconded the motion. He thought that the Charter had been granted in such a form as neither the Governors nor the Council wished.

Mr. Fleming thought that throughout the whole affair the Council had been entirely misled, and that dust had been thrown into their eyes. He confessed to a feeling of great regret and very much disappointment and vexation in the whole business.

After some further conversation the motion was put and carried, and the proceedings terminated.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

The 29th meeting of this Society was held at the Swan Hotel, Stafford, on Tuesday, June 1st, 1875, the President, T. Greaves, Esq., of Manchester, presiding. There was a numerous attendance, among whom were the following:—Messrs. F. Blakeway, Stourbridge; Bayley, Leicester; Cartwright, Wolverhampton; Naylor, Wakefield; Hill, Wolverhampton; Cartwright, Whitechurch; Earl, Shiffnal; Attwood, Bilston; Walters, Newport, Salop; &c.

The minutes of the last meeting were read and confirmed. Several letters and telegrams were read, apologising for non-attendance, among them one from Mr. Harpley, Mr. Fleming, Mr. Field, &c.

Mr. Alfred Over, Rugby, Mr. Goulê, Malvern Link, and Mr. Hodgkisson Uttoxeter, were unanimously elected members of the Association. The next meeting was arranged to be held at Wolverhampton about the 20th of August, when Professor Williams will read a paper on "The Rationalle of the Treatment of Disease."

The President gave the annual address, which was much appreciated, and elicited a warm vote of thanks and a unanimous desire that it should be sent for publication in the *Veterinarian*.

The members afterwards dined together, the usual loyal and patriotic toasts were given and appropriately responded to.

[We hope to give Mr. Greaves' address in our next number.—Eds.]

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

The quarterly meeting was held in the London Hotel, St. Andrew's Square, Edinburgh, on Wednesday, the 9th inst., at half-past two o'clock.

Professor Walley, President, in the Chair.

Present :—Messrs. Aitken, Young, Brown, Robertson, Cumming, Rutherford, and the Secretary.

Mr. Heatley, Pathead, was also present, and was nominated as a member.

As the attendance was so small, the reading of Mr. Rutherford's paper was postponed till next quarterly meeting.

Professor Walley directed attention to a specimen of rupture of the round and pubio-femoral ligaments with disease of the hip-joint, also to one of ossification of the internal semilunar cartilage of the stifle-joint discovered on dissection, there being no lameness when the animal was alive.

Prof. Walley also showed a specimen of rupture of the gastrocnemii tendons at the point of the os calcis. From the remarks made it appeared that this lesion occurs more frequently than is generally supposed, young, well-bred, and highly fed bulls and heifers being its most common subjects, though older animals are at times affected; and cases among horses, and more especially mares in foal or near the foaling, are occasionally met with.

Mr. Robertson (of Kelso) had seen it more or less for twenty years, generally in young stock. By careful examination he had found that in many cases fatty degeneration of the tendons had taken place, while in others the bones had become deteriorated in substance and structure.

Professor Walley made a few remarks on the Charter lately obtained by the Royal Veterinary College, and on the Education question. He thought that the Charter was not such a formidable affair as it at first appeared, and that it would not seriously affect or interfere with the Examinations for the Diploma of the Royal College of Veterinary Surgeons. *Professor Walley* also thought that the time had now fully come when the curriculum at the Colleges should be extended to three winter and two summer sessions.

Mr. Robertson said that the question as to whether the Charter lately granted would affect the Examinations of the Royal College of Veterinary Surgeons might very well be allowed to rest. So long as the Council of the Royal College of Veterinary Surgeons and the Governors of the Royal Veterinary College agreed, it

would matter but little; but if any disagreement should arise the Charter might enable the Royal Veterinary College to act in a great measure independently of the Council of the Royal College of Veterinary Surgeons, and it thus granted a privilege to the College which in his opinion no teaching establishment should possess. As regards the extension of the curriculum he, Mr. Robertson, thought that two summer sessions might be added if considered advisable, but that three winter sessions at least were imperatively necessary. He had always been against the division of the examinations into two periods. His opinion had been asked and he had given it freely before the alteration was made:—That a student should be proficient in anatomy after a winter and a short summer session was almost impossible; and that though Professor Turner and himself were very careful not to ask anatomical questions at the April examinations, yet he was convinced from the answers given in the physiological examination that many students who passed a very fair examination in anatomy in July, would make a very poor appearance if examined in it again in April. *Mr. Robertson* thought that after three winters' study the proficiency of the student could still be very well tested by one examination in April.

Mr. Heatley made a few remarks on the sudden death of three horses, with symptoms calculated to execute a suspicion of poisoning, the only post-mortem appearances visible being excessive congestion of the lungs and heart.

Some remarks were made as to the character of the Russian ponies now being imported, and as to the districts from which they came, and the parasites with which so many were infested.

C. CUNNINGHAM,

Slateford; June 16th, 1875. *Secretary.*

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

THE forty-third quarterly meeting of the above Association was held in the Medical Institution, Hope Street, on Friday evening, the 14th of May, 1875, the President, George Morgan, Esq., in the Chair.

The following gentlemen were present:—Messrs. Reynolds and Elam, Liverpool; Henry Barnes, Malpas; Cartwright, Whitchurch; Woods, Wigan; Whittle, Worsley.

Letters of apology were read from Mr. Broad, Bath; Mr. Gilbert Heyes, Liverpool; and Mr. Tom Taylor, Manchester.

After the minutes of the previous meeting had been read and approved, the President called upon the Secretary to read his paper

on "Twists in the Bowels, how to diagnose them with certainty, and practical suggestions how to reduce them." The paper was short but practical, and gave rise to a lengthy discussion, in which every member present took part. Several members said they preferred having the animals kept moving about whilst suffering from abdominal pain, whilst others, with the Secretary, advocated placing the horse in a well-littered loose-box and giving him every opportunity of rolling and fixing himself in the most comfortable position.

Mr. Cartwright, Whitchurch, related a very interesting case of twisted uterus which he was successful in reducing. Mr. Woods related a case of twisted uterus in a cow with a fully developed fœtus in it, the opening having become hermetically sealed; the cow was unwell for some time in consequence, but gradually recovered and was fed for the butcher. When killed the fœtus was quite perfect, but the membranes had all become absorbed, which, doubtless, had been the cause of her previous illness.

The President announced that Professor Walley, of the Edinburgh Veterinary College, had consented to read a paper at the next meeting.

CHARLES W. ELAM, *Hon. Sec.*

PARLIAMENTARY INTELLIGENCE.

TRANSPORT OF CATTLE.

HOUSE OF LORDS, *May* 31*st*.

Earl Delawarr rose to move for a copy of the Report of the Inspector of Privy Council relative to the importation of foreign cattle at Deptford, referred to by the Lord President on the 30th of April last.

Recently, he had occasion to put a question to the noble duke as to whether a statement which appeared in the *Times* of the 22nd of April last relative to the ill-treatment of cattle on board a ship in a passage from Antwerp to Deptford was correct. The statement had been made by Captain Sloan Stanley, an officer of the Royal Navy. The noble duke in his reply disputed the accuracy of the facts. To that he could at the time give no further answer, and he felt bound to accept the explanation of the noble duke; but upon further inquiry, upon additional testimony, and upon a second statement by Captain Stanley which had appeared in the *Times*, not only confirming the first, but adding that far from exaggerating, if anything he understated the case, he could come to no other conclusion than

that the facts of the case remained unanswered, and that Captain Stanley's report was in everything substantially correct. He would not trouble their lordships with a repetition of what had already appeared in the public press, only so far as to establish the case, which he desired to bring under their lordships' notice. In a second letter to the *Times*, dated May 3, Captain Stanley said—

"As the writer of the letter referred to upon the subject of the treatment of cattle, will you allow me to say that, far from exaggerating, I, if anything, understated the case? I have no object except that of humanity in acting as I have done, and I have no interest in the matter beyond that I further believe that most Englishmen witnessing what I did would be of opinion that such things should be put a stop to at once and for ever. I might in my letter have narrated cases of cruelty to particular animals had I not been fearful of encroaching too much on your space, as, for instance, the violent thrashing with sticks, the twisting of the tail and dragging by the legs inflicted on a beast that had the misfortune to fall on its side after being released from the slings. This case so excited my indignation that I shouted aloud to those who were torturing the animal, 'For God's sake let the poor beast alone.' I feel confident that if the Superintendent, who is 'noted for his humanity,' had stood by my side on the foredeck of the vessel, from which position I commanded a full view of all the proceedings, he would, as a humane man, have fully endorsed the terms of my letter, unless his perceptions have become blunted by often witnessing such scenes."

But he had a further confirmation of these facts in private letters from Captain Stanley, which he would, with their lordships' permission, now read:

"The thirst the poor brutes must suffer from is great, especially between decks, where the temperature is like that of the stoke-hole of a steamer in the Red Sea. I was so moved with pity at the sight of a poor animal that almost dislocated its neck in its frantic efforts to turn its head round to reach with its tongue a part of the deck that was a little damp, that I paid one of the crew to take some buckets of water round to some of the cattle, this one, of course, being included.

"The manner in which the poor creatures plunged their muzzles into the bucket and the eagerness that they displayed in drinking, proved to me that thirst might be reckoned as one out of many of their sufferings on board. The commotion that took place among the animals on the man with the bucket of water approaching them was most marked. Their eyes seemed to light

up with intelligence, and those who were distant made violent efforts to get at the water."

In addition to these, there was the testimony of a gentleman living at Deptford, who said—

"Captain Stanley's statements are true, and certainly not exaggerated—on the contrary, the inspectors of police have given me a much worse account of the treatment of the cattle than Captain Stanley's conveys. For instance, that the cattle are kept without water; and one means used by the landing people on arriving at Deptford is to hold a bucket of water close to the head of a beast which is so thirsty that it follows the man up the hold of the ship to the shore, there to undergo the goad and sickening thrashing of sticks.....I have travelled several times round the world; I have witnessed the treatment of cattle in South America, and in all the Australian Colonies, and I never saw anything so sickening and cruel as practised at Deptford market."

Such were the reiterated statements of Captain Stanley, supported by other testimony, with regard to this case of ill-treatment of cattle at Deptford. They were not made hastily or under excitement, but calmly and deliberately as an eye-witness of what he described, and he could not understand in what way the noble duke could have arrived at the conclusions which he did except on the supposition that official information passed sometimes through a somewhat dense medium and did not always reflect the brightest light. He came now to the second part of what he wished to ask their lordships to have laid upon the table of the House—viz. copies of the instructions issued to inspectors of ports in the United Kingdom relative to the importation of foreign cattle. He did this as he feared the case to which he had just referred was not a solitary instance of ill-treatment of cattle from the want of proper supervision and inspection. He was certainly somewhat surprised to find, and he thought their lordships would hardly expect to hear, that in some of our largest ports there was not the most ordinary provision made for the proper transport and landing of cattle. He had statements from experienced and practical men—men who were largely connected with the cattle trade—which showed that there was a total absence of all arrangements for the transport of cattle to secure their proper treatment and to protect the interests of the trade. He could give as an instance a no less important place than Liverpool—he might say one of the greatest, the wealthiest, and most important ports of the world. On the 1st of May this statement was made by Mr. Richard Hall, well known from his connexion with the cattle trade:

"Last Sunday 870 sheep were landed on the dock quay from

the Hamburg steamer Westmoreland. They were detained on the quay till Monday at noon in order that they might be passed by the inspector appointed for that purpose. The whole number were turned up, and it was found that one of the creatures walked a little lame, so it was declared to be affected with foot-and-mouth disease. Thereupon the whole number were detained upon the dock quay during the Monday night, without pens, without covering or shelter, and a portion even remained till Thursday morning."

"Monday night was cold, raw, and wet, and here were these helpless animals exposed to the inclement weather, without food and, so far as we can learn, without drink. But this is not all. They were all condemned to be stuck upon the quay, and in many cases, before the agonies of death were passed, the suffering creatures were thrown into carts and carried to the depôt at Sandhills, their life-blood colouring the streets as they were being carted along. . . Similar instances have been very frequent during the last three months, and any appeal to remedy this cruelty and obstruction to trade made to the authorities here has been unavailing."

He could add other testimony. He would ask their lordships to listen for one moment to what was stated by Mr. James Odams, whose name might be familiar to some of their lordships from his former large connexion with the cattle trade. Speaking of Irish cattle, and writing on the 7th of May, 1875, he said—

"At this season of the year we import thousands weekly for grazing in the Midland and Eastern districts. The state in which they arrive is simply disgraceful. Only on Monday last a considerable number were in the Metropolitan Market pictures of misery. The railway system and Channel transit of cattle require to be thoroughly overhauled, and not left to the mercenary interests of dealers and carriers."

He further added—

"You ask me if the state of things exists now as described in page 4 of my pamphlet. I have no hesitation in saying that it does, and in an extended degree. The Privy Council exercise no power at any of the landing places for cattle with regard to cruelty, feeding, or watering; the only duty they perform is examination as to disease and quarantine."

He would trouble their lordships with the testimony of one more only—that of Mr. T. Rose, a large farmer in Norfolk:

"Suppose a cargo of 1000 sheep arrives at one of our ports and 100 are seen to have the disease; they are slaughtered, and the remaining 900 are allowed to go to any market, thereby carrying the disease. . . The system of inspection is bad, and perfectly useless in staying this frightful malady. . . I imagine

that Norwich market is, if not the largest, one of the largest in the kingdom. It is virtually an impossibility to buy stock, especially cattle, at that market without their having foot-and-mouth disease. . . Of course the flesh of sheep and cattle suffering from this complaint cannot be anything like so good as those that are free from it, as they are in a high state of fever."

He thought he had now shown to their lordships, upon testimony which might be relied upon, that there was a case—a pressing case—for some steps to be taken to apply a remedy. The noble duke had stated that he was not prepared to take any further steps in the matter or to make any regulations beyond those which at present existed. He need hardly remind their lordships that by the Act of 1869 the Privy Council had the power, if he rightly read it, to make regulations which would obviate all existing evils. The noble duke would, doubtless, state to their lordships whether he had reconsidered this intention to do nothing. Perhaps the blame might be thrown upon the local authorities; but if there was no power to make them act, why not apply to Parliament for a power which would surely be granted? But, he believed, if vigorous measures were adopted under the existing law—if there were more stringent regulations and a better system of inspection and of licensing vessels for the cattle trade—much good would be done. Lastly, he might very briefly refer to the very grave question which arises both in the interests of trade and in a sanitary point of view. The loss which was sustained by diseased cattle was enormous, and not only was the quantity diminished, but the quality was seriously deteriorated. Large numbers of diseased cattle arrived weekly at different ports. If the disease was apparent, they were slaughtered on landing, and were bought by butchers to be sold for food. By a return issued in February last by the Veterinary Department of the Privy Council, it appeared (sec. 9) that 1619 animals affected with foot-and-mouth disease were landed at English ports from the Continent and were slaughtered. These, or at all events the greater part, were human food, but as it was now known that animals suffering from this disease were in a high state of fever, a very serious question must arise in a sanitary point of view. He trusted Her Majesty's Government would give the whole question their serious attention. It was demanded for the sake of humanity, it was demanded for the interests of trade, and it was required for the interests of the public. The noble earl concluded by moving for the papers.

The Duke of Richmond had certainly had no idea on reading the notice of his noble friend's motion that the noble earl intended to go again into the whole case of alleged cruelty to animals landed at Deptford, to which case he thought he had given a com-

plete answer on a former occasion. His noble friend assumed the accuracy of the allegations as regarded the treatment of the cattle in question, but he begged to say that he disputed altogether the accuracy of those allegations. On the last occasion when his noble friend brought the case under the notice of their lordships he, in reply, quoted the report made by the inspector to the department, in which it was pointed out that the facts were not such as they had been stated to be by his noble friend. He ventured to think that if the gentlemen who had written letters to the newspapers and corresponded with his noble friend had made inquires of the inspectors, and failing to obtain satisfaction from them had addressed the Department, it would have been unnecessary for his hon. friend to have moved in the matter. It appeared from a paper laid on the table of the other House of Parliament that on seeing Captain Stanley's letter in the *Times* the Secretary of the Society for the Prevention of Cruelty to Animals applied to him, and stated that the Society were ready to prosecute if the gallant gentleman would come forward as a witness and furnish the Society with the names of the perpetrators of the alleged outrages. The gallant officer declined to accede to that request. He submitted that Captain Stanley put himself out of court by declining to appear as a witness, he being the only person who could have proved the case. (Hear, hear.) His noble friend had spoken of other reprehensible occurrences at Deptford besides those the subject of Captain Stanley's letter. If there had been such occurrences, it was surprising that nothing had been heard of them at the Privy Council Office. With respect to the cruelties spoken of by Mr. Richard Hall, of Liverpool, he could say nothing of them, because he had not heard of them before, even in the shape of a notice that it was his noble friend's intention to bring them forward; but he could not help remarking that though Mr. Hall might have had great experience in the cattle trade, he could not know very much about agriculture. That gentleman complained that in the month of May sheep were exposed to the weather. He appealed to any flockmaster as to whether it was customary to have sheep under cover in the month of May. He should think that sheep would feel very much astonished to find themselves under cover at this season of the year. (Hear, hear.)

Earl Delawarr observed that a part of the complaint was that the sheep were left without food.

The Duke of Richmond could not reply to that portion of the charge, for the reason he had already stated. He could not suppose that complaints had been made, and made in vain, to the local authorities, because his experience at the Privy Council Office enabled him to say that such appeals found their way very speedily to London and to the Privy Council Office, where in this

case they would have come under his notice, and he would have directed a searching inquiry. His noble friend said that official information passed through a dense medium. Well, perhaps he was the dense medium to whom his noble friend referred (a laugh); but he could only repeat that the information spoken of by his noble friend had not reached him at all until he heard the statement of the noble earl. (Hear, hear.) He believed the law was sufficient, and he hoped his noble friend would be of the same opinion when he perused the papers for which he had moved, and to the granting of which there was no objection on the part of Her Majesty's Government. (Hear, hear.)

The motion was then agreed to.

HOUSE OF LORDS, *Friday, June 11th.*

Earl Delawarr moved for a Select Committee to inquire into the state of the law with regard to the transport of cattle by sea and land; also into the rules and regulations of the Privy Council, with special reference to the methods of transfer now adopted, and to receive evidence with reference to such alterations of the law as may be deemed advisable, and to report upon it. The noble earl expressed his regret that the Lord President of the Council had not made a more stringent inquiry into the case of the ill-treatment of cattle at Deptford recently, and his conviction that in various outports there was not that strict vigilance exercised over the landing of cattle which it was the desire of the Privy Council there should be. No Parliamentary inquiry had been made since 1866. In 1869 Mr. Simonds, one of the inspectors under the Privy Council, described the overcrowding of vessels freighted with cattle, and suggested a system of licensing the boats. He quite admitted that much had been done by the railway companies to lessen the sufferings of cattle, but he complained that the regulations of the Privy Council, which were sufficient to check the evil, were not adequately enforced by their inspectors; and he stated that in consequence of the laxity that prevailed a large number of diseased cattle were imported, and actually were allowed to be sent to market at Deptford, which was established for the sale of diseased meat. Under these circumstances he thought he was justified in moving for the Committee.

The Duke of Richmond expressed some regret that he did not recognise a statement made on the last occasion by the noble earl, on the authority of Mr. Hall, on a case in which he had made some inquiries at the office, and that some alterations had been made in the landing arrangements at Liverpool. But the graver statements made by Mr. Odams as to the insufficiency of

food and water, and as to the general treatment of cattle on landing, he should show were not correct. He could not assent to the appointment of the Committee, because the whole of the information which the noble earl desired to extract was already before the House. The noble duke enumerated the inquiries which had been made by the Committee presided over by the late Sir A. Helps in 1869, who examined a large number of witnesses both from the railway and steamship companies and importers of cattle, as well as independent witnesses. The Committee reported that the cattle were far better treated on board vessels than the readers of sensational articles in the newspapers were aware of. So far from there being frequent cases of suffocation, a return had been obtained by the Privy Council which showed that the deaths of cattle on board ships did not amount to more than decimal 4 per cent. It was quite impossible that they could have any system of licensing ships for the conveyance of cattle, which would be quite opposed to all consideration of free trade, nor would it have any other effect than that of raising the price of meat to the consumer, which would be a very serious thing. He pointed out that his noble friend was in error in supposing that there was a market for diseased cattle at Deptford. The fact was, that there was a market to which cattle from all scheduled countries were sent for being slaughtered on landing, but that did not imply that they were diseased. The various recommendations of the Committee in respect to providing water and food troughs, and other conveniences for cattle at the place of landing, had been carried out by orders of Council. He also read the report of the House of Commons Committee in 1873 under the presidency of Mr. Forster, and he mentioned that he had not only made an addition to the number of inspectors of ten, but he had appointed a travelling inspector, and all the officers of the Privy Council had instructions to report any cases of cruelty. He had made some inquiries of the officers of the Board of Trade with reference to this question, and from the information he had received from them he was convinced that he should not be justified in asking their lordships to occupy their time in serving on a Committee, although, no doubt, in the interest of humanity they would willingly do so if any good could result from it (hear, hear).

Lord Carlingford was convinced, from the answer of the noble duke, that whatever might be required to correct the evils complained of, if they existed, was not a further inquiry. That undertaken by the two Committees referred to was exhaustive, and nothing was more wearisome than to enter on a long inquiry, take a vast deal of evidence of a similar character to what had been already taken, and which would undergo a rapid burial in

some blue-book, and all to no purpose. He believed that the most effectual remedy for the evil, if it existed, was to bring every case of cruelty to the notice of the Goverment (hear, hear).

Viscount Portman rejoiced that the noble duke had thought it right to refuse this Committee, which would be attended with no earthly good. He believed that much of the disease found in animals was contracted at sea.

Lord Dunsany also said that he did not think a new inquiry was necessary, but thought much good would result from the appointment of the travelling inspector to go about among the steam vessels and on railways and inspect the cattle.

Earl Delawarr would not press the motion, but at the same time thought that it was no answer to say regulations were issued by the Privy Council. They ought to be more stringently enforced.

The motion was then withdrawn.

DRUGGING OF ANIMALS BILL.

The following is a copy of the Bill introduced by Sir John Astley into the House of Commons, and endorsed also by Mr. Chaplain and Mr. Rowland Winn. It is now awaiting second reading.

Whereas it is expedient to make provision for putting an end to the practice of administering poisonous drugs and other compounds to horses and other animals by disqualified persons, and without the knowledge and consent of the owners of such horses and animals:

Be it enacted by the Queen's most Excellent Majesty, by and with the advice and consent of the Lords Spiritual and Temporal, and Commons, in this present Parliament assembled, and by the authority of the same, as follows:

1. From and after the *passing of this Act* if any person other than a member of the Royal College of Veterinary Surgeons of Great Britain, or any person acting under his direction, shall give any horse or other animal any one or more of the several articles named or described either in Part I or Part II of the Schedule A to this Act without the consent of the owner of such horse or animal, such person shall be deemed guilty of a misdemeanor, and shall on conviction thereof be liable for each offence to a penalty not exceeding *ten pounds*, or to be sentenced to be imprisoned, with or without hard labour, for any term not exceeding *three calendar months;* but nothing in this Act contained shall exempt any person from any heavier punishment to which he might be liable under any other Act, provided that no person shall be punished twice for the same offence.

2. The several articles named or described in Part II of the

Schedule A to this Act shall be deemed to be poison within the meaning of this Act.

3. It shall be unlawful to sell any poison, either by wholesale or by retail, unless the box, bottle, vessel, wrapper or cover in which such poison is contained be distinctly labelled with the name of the article and the word poison, and with the name and address of the seller of the poison, and it shall be unlawful to sell any poison to any person unknown to the seller, unless introduced by some person known to the seller; and on every sale of any such article the seller shall, before delivery, make or cause to be made an entry in a book to be kept for that purpose, stating, in the form set forth in Schedule B to this Act, the date of the sale, the name and address of the purchaser, the name and quantity of the articles sold, and the purpose for which it is stated by the purchaser to be required, to which entry the signature of the purchaser and of the person, if any, who introduced him, shall be affixed; and any person selling poison otherwise than is herein provided shall, upon a summary conviction before two justices of the peace in England, be liable to a penalty not exceeding *five pounds* for the first offence, and to a penalty not exceeding *ten pounds* for the second or any subsequent offence, and for the purpose of this section the person on whose behalf any sale is made by any apprentice or servant shall be deemed to be the seller; but the provision of this section shall not apply to articles to be exported from Great Britain by wholesale dealers, nor to sales by wholesale to retail dealers in the ordinary course of wholesale dealing, nor shall any of the provisions of this section apply to any medicine supplied by a legally qualified apothecary to his patient, nor apply to any article when forming part of the ingredients of any medicine dispensed by a person registered under the Pharmacy Act, 1868: Provided such medicine be labelled in the manner aforesaid, with the name and address of the seller, and the ingredients thereof be entered with the name of the person to whom it is sold or delivered in a book to be kept by the seller for that purpose; and nothing in this Act contained shall repeal or affect any of the provisions of an Act of the Session holden in the fourteenth and fifteenth years of the reign of Her present Majesty, intituled "An Act to Regulate the Sale of Arsenic."

4. Penalties recoverable under this Act may be recovered in a summary way before any two or more justices of the peace in petty sessions assembled, and according to the provisions of any Act regulating the powers and duties of justices of the peace; and one third of every sum of money recovered as a penalty under this Act shall be paid to the person who shall be the means of bringing to justice any person committing any offence against any of the provisions of this Act.

5. This Act shall not apply to Scotland or Ireland.

6. This Act may be cited as "The Drugging of Animals Act, 1875."

SCHEDUDES.

Schedule (A).

PART I.

Arsenic and its preparations.
Prussic acid.
Cyanides of potassium and all metallic cyanides.
Strychnine and all poisonous vegetable alkaloids, and their salts.
Aconite and its preparations.
Emetic tartar.
Corrosive sublimate.
Cantharides.
Savin and its oil.
Ergot of rye and its preparations.
Oxalic acid.
Chloroform.
Belladonna and its preparations.
Essential oil of almonds, unless deprived of its prussic acid.
Opium, and all preparations of opium or of poppies.

PART II.

Sulphuric acid or oil of vitriol.
Nitric acid or aqua fortis.
Hydrochloric acid or spirits of salts.
Muriatic antimony or butter of antimony.
Sulphate of iron or green vitriol.
Sulphate of copper or blue vitriol.
Sulphate of zinc or white vitriol.

Schedule (B).

Date.	Name of Purchaser.	Name and Quantity of Poison sold.	Purpose for which it is required.	Signature of Purchaser.	Signature of Person introducing Purchaser.

Veterinary Jurisprudence.

LIABILITY OF SERVANT FOR HORSE KILLED BY ILL-TREATMENT.

This was an action recently raised in the Sheriff Court of Perth, at the instance of Mr. William Hunter, Grange Brewery, Errol

against William Stoddart, sometime carter in his employment, for £30, being the loss alleged to have been sustained by him in consequence of the defender having killed one of his horses by violent treatment. The circumstances of the case are fully stated in the note to the following interlocutor, pronounced by Dr. Barclay, finding the defender liable for the value of the horse, with expenses:

Perth, 10th April 1875.—Having heard parties' procurators, and made avizandum with the process, proofs, and debate, finds as matters of fact—1st, That on the day libelled the defender was in charge of a black horse, the property of the pursuer, and whilst placing it in the stable did catch the said animal by the nostrils, and when so held did kick it once or more on the side, whereby its diaphragm was ruptured and it instantly died; 2nd, The value of the horse is proved to have been of the value claimed. Therefore, in law, finds the defender liable in said sum, in consequence of his culpably occasioning the death of said horse, to the loss and damage of the pursuer. Decerns in terms of summons. Finds the defender liable in expenses; allows an account thereof to be lodged, and remits the same to the auditor to tax, and decerns.

(Signed) HUGH BARCLAY.

Note.—The horse was under the charge of the defender at the time of its death, and was proved to have been in vigorous health. It died instantly, and it is proved by skilled witnesses that the cause of death was violence. No one had the opportunity of using violence at the time but the defender. If the death is thus fixed on the defender, it is a secondary question what was the kind and amount of the violence. The defender appears first to have been in fault in not having a halter attached to the horse when taken to the watering-place. In consequence of this, the horse took its pleasure and ran about at large until caught. That it received its death-blow by this exertion, or coming in contact with some object (as argued by the defender's solicitor), is excluded by the nature of the injury and the position of the internal marks. It is clear that the defender, in consequence of the vagaries of the horse, lost command of his temper and sought to punish the animal. The beating on the posteriors by a barrel stave could not have occasioned death—not even the blows on the head. But on the proof the holding it by the nostrils, and intercepting its free breathing for any length of time, could not have been devoid from danger. It may not be uncommon momentarily to seize a horse in this way to overcome its obstinacy. But here it is proved that, whilst so held by the defender, he kicked the animal on the side more than once. As shown by the skilled persons, the kicks would of necessity be received on the very region of the vital power. The horse being heated by its previous exertions, and its breathing intercepted, there appears no wonder of the rupture and instant death. It might have been well had the professional witnesses seen the marks underneath the skin, and that this very important point of real evidence had not rested on one so much less skilled in such matters.

The Sheriff-Substitute, considering the age of the animal and the price originally paid for it several years ago by the pursuer, wished he could, under circumstances so hard for the defender, have modified the amount; but bound to decide on the evidence, and there being none on the opposite side, he is compelled to award what is established to be the value of the horse at the time of its unfortunate death.

(Initd.) H. B.

The defender having appealed to the Sheriff-Principal, he had now issued the following interlocutor affirming Sheriff Barclay's decision:

Edinburgh, 14th May 1875.—The Sheriff, having considered the foregoing appeal and whole process, dismisses the appeal and adheres to the interlocutor appealed from.

(Signed) JAMES ADAM.

Note.—The Sheriff has no doubt, upon the evidence, that the pursuer's horse died in consequence of the culpable violence used to it by the defender. He is responsible for the consequences of his acts, and is therefore liable for the value of the horse, which is proved to have been of the value claimed.

(Initd.) J. A.

VIVISECTION—APPOINTMENT OF A ROYAL COMMISSION.

IT is announced that the Queen has appointed Viscount Cardwell, Lord Winmarleigh, the Right Hon. W. E. Forster, M.P., Sir J. B. Karslake, M.P., Mr. T. H. Huxley, Professor of Natural History in the Royal School of Mines, Mr. John Eric Erichsen and Mr. Richard Holt Hutton, to be Her Majesty's Commissioners to inquire into the practice of subjecting live animals to experiments for scientific purposes, and to consider and report what measures, if any, it may be desirable to take in respect of any such practice.

ROYAL VETERINARY COLLEGE BOTANICAL EXCURSIONS.

BOTANY.—The excursions from the Royal Veterinary College have been largely attended this summer; 54 of the pupils visiting Great Marlow Woods, 84 going to Osterley Park, 74 to Hendon, 76 to Kew, and about 20 at the last excursion to Elstree.

APPOINTMENT.

Dr. Cobbold, F.R.S., has been reappointed Examiner in Botany and Comparative Anatomy for the Natural Science Scholarships in connection with St. Mary's Hospital Medical School.

MISCELLANEA.

THE HORSE SUPPLY.

The following is a list of those noblemen, gentlemen, and others who have agreed to subscribe £100 per annum for five years in aid of our horse supply. The great majority of these gentlemen are large landed proprietors:—His Royal Highness the Prince of Wales, his Royal Highness the Duke of Cambridge, the Earl Spencer, Lord Londesborough, Lord Leconfield, Mr. Edward Baring, the Duke of Westminster, Mr. G. H. Sturt, M.P., the Earl of Lucan, the Earl of Wilton, Mr. George Drummond, Mr. A. F. Godman, the Marquis of Exeter, the Duke of Sutherland, Mr. Henry Chaplin, M.P., Lord Abercromby, the Duke of Beaufort, the Earl of Aylesford, Captain Machel, the Earl of Lonsdale, the Marquis of Hartington, the Earl of Ellesmere, the London General Omnibus Company, the Duke of Richmond, Mr. A. H. Brown, M.P., Lord Dacre, Lord Redesdale, the Earl of Craven, the Duke of Wellington, the Earl of Normanton, Mr. W. W. Fitzwilliam Dick, M.P., the Earl of Shetland, the Earl of Shrewsbury, Admiral Sir George Broke Middleton, Mr. Albert Brassey, Mr. R. Oswald, and the Bath and West of England Agricultural Association.

OBITUARY.

We regret to have to record the death of Mr. James Hine Langworthy, M.R.C.V.S., Veterinary Surgeon to Her Majesty the Queen. Mr. Langworthy died on June 16th, in the seventy-fifth year of his age. For many years he had ceased to take an active part in the affairs of the profession, and consequently was known by name only to many amongst us. He had held office both as a Vice-President and Councilman of the Royal College of Veterinary Surgeons. His diploma bears date July 6, 1824.

ERRATUM.

The Secretary of the Royal College of Veterinary Surgeons writes that his attention has been directed by one of the *late* Vice Presidents, Mr. M. E. Naylor, to an error in last month's *Veterinarian*, in which his attendance at the Council Meetings is reported *Nil*, while that of Professor McCall is 5. It should have been *vice versâ*.

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Communications and Cases.

FURTHER EXPERIMENTAL RESEARCHES WITH THE EGGS OF THE BEEF TAPEWORM.

By T. Spencer Cobbold, M.D., F.R.S., F.L.S., Professor in the Royal Veterinary College, and Correspondent of the Academy of Sciences, Philadelphia.

From the publication of previous results obtained by Leuckart, Mosler, and St. Cyr, abroad, and by Principal Simonds and myself in this country, it might readily have been supposed that no more experiments were needed in connection with the beef tapeworm in order to show whence the infection of the human bearer proceeded. The experiments initiated by Leuckart, and successfully repeated by ourselves at the Royal Veterinary College many years ago, seemed to show that the scoleciform larvæ of the *Tænia mediocanellata* only took up their abode in the voluntary muscles of the intermediary bearer. In other words, we found as the result of our proglottid feedings that the measles (*Cysticercus bovis*, T.S.C.) of the tapeworm in question only developed themselves in the muscle-flesh of our experimental animals. From the data thus obtained it was, perhaps, somewhat too hastily concluded that in the muscles and in the striated muscles only could the Cysticerci arrive at perfect development as such. I believe that Continental helminthologists have entertained and still entertain the same

view. Out of the many feeding experiments that have been performed under my auspices, several have been recorded as negative; but in all these negative cases, with one exception, I was not personally present at the *post-mortem* examination. In the exceptional instance referred to I was at first led to pronounce the result as negative; but I did so with marked reservation, directing the attention of my pupils to the fact that the liver of the slaughtered animal showed minute specks of gritty matter which I believed to be of cysticercal origin. The sequel has proved that my opinion was correct, and, so far as I am aware, the results now obtained in two separate instances are altogether unique. Practically, many interesting issues flow from the facts thus elicited, and the results show clearly what we are too often apt to forget, namely, the danger of drawing conclusions from a limited number of data.

No longer are we at liberty to say that the muscles of cattle constitute the only *territory* for the production of the *cestode tuberculosis*, as Leuckart calls this form of helminthiasis, since we are now in a position to prove that the liver and the lungs of oxen, cows, or calves, as the case may be, are apt to become the seat of this cestode development. A clear gain is thus gathered both scientifically and practically, as it follows that results hitherto supposed to have been negative may have been positive, whilst organs of the body hitherto supposed to be incapable of becoming measled by this particular species of entozoon may not only share in the helminthiasis, but may even constitute, apparently, the only seat of the affection. Fortunately, whilst great gain to the ultimate or human host is thus arrived at, the intermediary bearer suffers little or nothing from the invasion of the tapeworm larvæ. This can scarcely be wondered at, since every succeeding year brings one or more cases of cattle disease under our notice where the liver of the slaughtered animal is literally swarming with echinococcus vesicles, and yet in all or nearly all such cases it has been asserted with confidence that the animals never showed a symptom of any kind. I, for one, am far from thinking that the echinococcus disease is entirely innocuous amongst animal bearers; nevertheless, I shared in the astonishment which my pupils displayed when we found the liver and lungs of cattle, sheep, and pigs, as the case has been, one entire mass of hydatid disease, and yet no symptom of constitutional disturbance had shown itself in the affected animals during life. An instance of this sort was recorded by our contemporary last month, from foreign sources.

As some people are fond of eating the livers of animals,

they will do well to remark that they may thus contract tapeworm, apart from which consideration the presence of cestode larvæ is not likely to render the organ more palatable. I have myself on several occasions seen echinococci and measles at the dinner table, and have carefully dissected out both hydatids and cysticerci from meat on my plate, not caring to eat these parasites, though they were usually sufficiently well cooked to prevent any ill effects from their consumption.

With these preliminary remarks I subjoin a list of worm-feeding experiments conducted at the College. This list is incomplete in some respects, and has reference only to feedings conducted with proglottides of the beef tapeworm. In all the recent cases the feedings were made from worms which I had expelled from my private patients. Many of these cases are of great interest in themselves, and in the *third* edition of my work on "tapeworms," now in the press, I have recorded 100 such cases, a considerable proportion of them affecting officers in H.M. Indian Army. In drawing up this list I am largely indebted to my colleague Principal Simonds, under whose immediate direction the actual feedings were always made with all that care and precaution necessary to ensure adequate scientific results. Our earliest experiments, with dates and references, are included.

Experiment 1.—A calf. First feeding, Dec. 21, 1864. Marked symptoms. Slaughtered April 3, 1865. Result positive. Published in 'Proceed. Royal Soc.,' May, 1865.

Experiment 2.—A calf. First feeding, April 13, 1865. Second, third, and fourth feedings in May and June. No symptoms. Died on Sept. 3rd, 1865, after 36 hours' illness with "cattle plague." Result stated to have been negative as far as the muscles were concerned. Viscera not examined. Particulars of the case not hitherto published.

Experiment 3.—A Dutch heifer. First feeding on the 3rd of March, 1865. Three subsequent feedings. Symptoms only slight. Slaughtered April 4, 1866. Result positive. Measles especially numerous in the diaphragm, but all had undergone calcareous degeneration. Case published in Supplement to 'Entozoa,' chap. v, p. 32, *et seq.*

Experiment 4.—A calf. Fed May 27th, 1872, with ripe proglottides expelled by me from an American. Marked symptoms set in on the 7th of June, which began to abate on the 12th, and had nearly disappeared by the 20th of the same month. The result in this case has been lost; but there can be no doubt that the animal was infected.

Experiment 5.—A calf, which had been made the subject

of a "glanders-experiment." First fed on Oct. 17, 1872, and thrice subsequently in the following year, namely, Jan. 1st and 11th, and March the 8th. In the last three cases, respectively, I had expelled the employed proglottides from the daughter of a medical man, from a clergyman, and from a brass-founder. No symptoms having appeared, the animal was kept for six or eight months subsequent to the last feeding, and, seeming to be perfectly free from disease of any kind, it was sold as a sound heifer.

Experiment 6.—A lamb. This animal was fed with the proglottides of a remarkably small-jointed and slender tapeworm, expelled by me from a lady-patient. The head was not present, though probably only an ill-nourished *Tænia mediocanellata*. I had a suspicion that it might turn out to be the mutton tapeworm, or my *T. tenella*. In this I was disappointed. No symptoms. Slaughtered Jan. 22, 1873. Result *stated* to have been negative.

Experiment 7.—A young heifer calf, of six months. Fed on the 18th of October, 1873, with the mature proglottides of a large beef tapeworm, which I had obtained from a young lady the same morning, the head of the parasite having been expelled on the following day. No symptoms. Slaughtered several months afterwards. Result *stated* to have been negative.

Experiment 8.—A young heifer, which was subsequently made the subject of an experiment with exudation matter obtained in a case of pleuro-pneumonia. First fed on the 19th of May, 1874, with the joints of a tapeworm that I obtained from a member of the legal profession, and again on the 12th of June with proglottides expelled from a letter carrier. No apparent ill effects resulted from the feeding but the animal died in the following October. At the *post-mortem* examination, to use Prof. Simonds' words, "no parasites were observed," but I afterwards noticed some calcareous specks in the liver which I thought might be due to measles. This has since proved to be the correct view of the case.

Experiment 9.—A calf. Fed on or about the 24th of March, 1875, with the entire sexually mature joints of a tapeworm that I had expelled from a little boy only two years and three months of age. The calf was put to and remained with a foster mother until it died from disease of the larynx on the 15th of the following July. The animal was ill treated by its foster parent, and at the *post-mortem* I observed a large intercostal cicatrix, evidently the result of injury. In this case I devoted several hours to the exploration of the muscles and viscera. Not a trace of Cysticercus could be found in

the muscles or connective tissues, but the liver contained scores of perfectly developed measles, besides hundreds of others in various stages of calcareous degeneration. On comparing some of the latter with those I had obtained and fortunately preserved from the preceding experiment the pathological appearances were at once seen to be identical. It was easy to find and pick out the measles in their cysts from the naturally friable liver, but it was only after considerable search that I also detected Cysticerci in the lungs. From these organs I obtained only four specimens, two of which had degenerated, but there can be little doubt that several others evaded my most careful scrutiny. Subsequent microscopic examinations entirely confirmed my previous interpretation of the naked-eye appearances.

Concluding Remarks.—Fragmentary as the above data are, they serve to show that we have hitherto been too hasty in concluding that beef and veal measles reside only in the voluntary and striated muscles of their hosts. The facts also prove that the liver of a calf may be extensively invaded by Cysticerci, and yet the animal will exhibit no sign of constitutional disturbance. The cestode tuberculosis may come and go without any diagnostic symptom, whilst a few months suffice for the natural death and decay of the parasite by calcareous degeneration. Thus it becomes extremely probable that many experiments hitherto recorded as negative in their results have really been positive; the pathological evidences having been either misinterpreted or altogether overlooked. Every pathologist is familiar with gritty particles in the various viscera of man and animals, but few are probably aware how constantly these are deceased and degenerated Cysticerci. The gritty particle itself may be reduced to the merest point, no larger than the *receptaculum capitis* of the Cysticercus itself, and in course of time it will disappear entirely. Practically it is satisfactory to have experimental evidence of the fact that cattle, as well as other animals, however extensively measled they may have been, become thoroughly cleansed of the disorder by nature herself when once they are separated from infectious influences.

TYPHOID FEVER IN PIGS.

By J. Wortley Axe, M.R.C.V.S., F.C.S., Professor of Histology and Morbid Anatomy in the Royal Veterinary College,

(*Continued from p.* 497.)

Pending the result of certain experiments which are being performed to elucidate more completely the true nature of *pig-typhoid*, I now propose to refer to the mode of access of the poison, and then to speak of the incubative period and the symptoms which are developed during the fever process. I shall also endeavour to indicate the specific phenomena of the malady and to point out the conditions under which they exhibit their greatest modifications.

Food and water, it may be suggested, are the more common media through which the specific contagium of pig-typhoid finds its way into the body. It must not, however, be concluded that the mode of access is thus limited, nor that the intestinal mucous membrane is alone the part in which the poison is augmented. I shall presently show, by facts as clear as experiment can develop, that the air is an active agent in the dissemination of *enteric disease*, and that the skin is a powerful and extensive augmentor of the specific virus. From the last-named source the virus may be collected in large quantities in the form of a thin, transparent, colourless fluid, not unlike that which is furnished by the vesicles of small-pox and sheep-pox. When this virus is transferred to the organisms of healthy animals by the operation of inoculation the result which follows is as certain and specific as that which obtains in any other contagious disorder. Physically, so far as the unaided eyes can determine, the properties of this fluid are in every respect identical with those of smallpox virus; and its contagious principle is no less potent. This will be understood when it is known that so much as can be borne on an ordinary ivory point in a dried condition is, long after its removal from the infected body, capable of lighting up a fatal fever-fire, and reproducing its kind in a manner peculiar to that group of diseases to which the one in question essentially belongs. The length of time which elapses between the introduction of the typhoid infection into the system and the development of the disease is liable to some variation; and, judging from my own observations and experiments, it is tolerably clear that this difference in the period of the

hidden action of the contagium has reference more particularly to the quantity introduced into the system, and perhaps also in a less degree to the physiological condition of the body, and the age of the animal at the time of its introduction. The first proposition is based mainly on the fact that, where large numbers of pigs suffering from *enteric disease* are crowded together, and the necessarily coexisting bad sanitary conditions, *there* the incubative stage will be reduced to its minimum, and a fatal outbreak be the consequence. As the number of infected animals increases in a herd, so within certain limits will the period of latency diminish, and for the obvious reason that the centres of the *fever-poison* are being multiplied again and again, and the quantity of the morbific matter which now finds access to the body is multiplied in a similar proportion. It should be borne in mind in considering this question that the peculiar habits of the pig are such as to ensure a certain and deadly infection of both food and water. Rarely is a meal partaken of but that the feet, laden with the filthy fever-tainted excreta, are immersed in the food again and again, so that in this way a large supply of virus is being introduced into the system from time to time in the most concentrated form. With these facts in view it is hardly a matter for surprise that *enteric disease* should develop so quickly and prove so rapidly fatal as it is sometimes wont to do. Under such circumstances the mind of the owner of the animals is disarmed of the idea of ordinary disease, and seeks naturally to refer the effects of a virulent disease to the influence of some chemical agent. This position is illustrated by the Corston pig case and by others which have recently come before our law courts. Without considering the subject of infection in all its relations we can understand how animals may be dosed with the contagium until the incubative period of the disease is reduced to its narrowest limits, probably not more than a few hours. Under other circumstances, when the infection is less extensive, the incubation may be prolonged to various periods, depending upon the circumstances already alluded to.

In regard to aërial infection as well as inoculation the same principle holds good. The duration of the incubative stage is in the direct ratio of the period of exposure on the one hand, and the amount of matter directly introduced into the fluids of the body on the other. From these considerations it will appear that no definite period of latency can be laid down as applicable to all cases. Although this is so, the uniform results of my own experiments, and observations made under ordinary circumstances would seem to indicate that the

incubative period of *pig-typhoid* is no less definite than that of other diseases belonging to the same group. Neither "smallpox," "sheep-pox," "measles," nor "scarlet-fever," nor indeed any of these infectious spreading disorders can be said to have a fixed and undeviating incubation. From the experiments of Dr. Sutton it would appear that from thirteen to fourteen days is the time which elapses between the exposure of an animal to the *contagium* and the development of the first decided symptoms of the disorder; but as will be seen by experiments presently to be described, a great discrepancy exists with regard to this between Dr. Sutton and myself. Whether an explanation of this circumstance is to be found in the mode of observation or in the circumstances and conditions surrounding the animals experimented upon I am not in a position to determine.

It should, however, be remarked that the period of invasion is not usually characterised by symptoms of an acute kind, and a stranger to the habits and natural physiognomy of the pig is not unlikely to overlook the specific phenomena which attend this important stage of the malady. Moreover, to those who are accustomed to rely to a great extent on subjective symptoms in determining the nature and progress of disease, the faint manifestation of ill health which ushers in *enteric disease* would most likely go unperceived unless, as before observed, they were familiar with the general aspect and habits of the animal in question.

Five days may be fairly stated to be the incubative period of pig-typhoid, as confirmed by natural cases which have come under my own observation, and by experiment. As previously remarked, this period is liable to some variation, but the ordinary limits may be set down at four to eight days.

Of the numerous appellations by which *enteric fever* has been known in this and other countries the great majority have pointed rather to the colour of the skin than to any real pathological condition of the organisms; hence we hear of "red soldier," "blue disease," "purples," "scarlatina," &c., from which it is clear that one of the most common and striking symptoms in connection with the malady is discoloration of the skin. As, however, the skin of the pig is peculiarly liable to become red, and even purple, under almost every variety of acute disease, but little importance can be attached to this symptom *per se*. In anthracoid or blood-affections this condition of the cutaneous covering is almost invariably present to a greater or less extent, and perhaps it is on this account that veterinary surgeons both

at home and abroad have confounded the two affections and entirely overlooked the specific eruption which so clearly distinguishes *enteric disease* from all other disorders. The early symptoms of typhoid in the pig, as in the human subject, are of the slightest kind, and the progress of the disease is usually most insidious. By such imperceptible gradations does it sometimes proceed that unless the greatest possible care be exercised in the bodily examination of the patient the most experienced practitioners will sometimes fail to fix upon the precise period of its evolution. Animals in this early stage of the disease are commonly, and I fear often knowingly, conveyed from market to market, spreading broadcast the seeds of the malady, and inflicting heavy losses on those who may be unfortunate enough to follow in their wake. Municipal authorities do not usually adopt over-strict sanitary measures in regard to the markets over which they preside; and as *typhoid disease* in pigs is not taken cognizance of by the "Contagious Diseases (Animals) Act," no great wonder can be entertained that our losses from this affection should annually reach such a large amount. The obscurity of the early symptoms of *pig-typhoid* is directly opposed to its immediate subjection, and the maxim so tenaciously held by herdsmen, that so long as animals continue to feed, and do not give evidence of suffering, they are necessarily free from disease, is a doctrine as dangerous as it is unreliable. So far as my observations have gone the earliest indication of systemic disturbance is manifested about the third day after infection. At this time an increase in the temperature of the skin is very perceptible. The hand applied to any part of its surface, but more particularly on those parts where the skin is thin, is at once impressed with the increase of heat. On the fourth day either uniform or patchy redness is developed on the under part of the abdomen, and on the inside of the arms and thighs, and behind the ears. The extent and intensity of the rash is commonly a fair index of the severity of the attack, as well as the amount of eruption which will follow. It is not until the fifth day that the typhoid eruption appears upon the skin and the disease is definitely pronounced. Hitherto the specific nature of the eruption of *pig-typhoid* has been entirely overlooked. Dr. William Budd, who for the first time in 1865 clearly defined the pathology of the affection referred to the purple condition of the skin and the blood-blotches which appear upon it on the decline of the fever-process, but makes no mention of that typical eruption here described which so fully confirms the opinion he then expressed, that *pig-typhoid* is "the exact

counterpart of typhoid fever in man." Just as the eruption of the smallpox of sheep is in every phase of its history and development like the eruption of human variola, so is the cutaneous eruption of *enteric fever* in the pig the pathological equivalent of the typhoid eruption of man.

Preceded by a considerable rise of internal temperature, the eruption is developed on the fifth day in the form of small round raised spots of a faintly red colour. The under surface of the belly and breast, the haunch, the inside of the arms and thighs and behind the ears, are the parts on which it is most commonly observed. These spots vary in size from one to three lines; some are acuminated; others, and by far the majority, present a more or less rounded free surface. They are circular in outline, and rise from a diffused or circumscribed base. Some are but slightly raised above the general surface of the integument, and apart from their colour can only be recognised by drawing the finger gently over the part. They are somewhat firm in consistence, and the redness quickly disperses on the application of pressure. In this connection it may be well to observe that supervening upon this characteristic eruption, and in an advanced stage of the disorder, blood-blotches and petechiæ appear in the structure of the skin, to a greater or less extent, over its entire surface, and hence the terms "purples," "red soldier," blue disease," &c. It is not to these spots I now refer; they are the result of blood extravasation, and are in no way affected by pressure; they are persistent, and can only be removed by the natural process of absorption. I am prompted to make this explanation in consideration of certain statements which were made and strongly urged by some members of the profession who were recently engaged in the Corston pig case. The extent of the eruption differs in a great degree in different cases. Sometimes it is entirely absent; at others not more than from six to a dozen spots will appear, and these perhaps are scattered over a large area, so that unless the closest scrutiny is exercised in searching for them the probability is that they will be altogether overlooked. In the great majority of instances the eruption is decided and extensive, much more so than obtains in the corresponding disease of the human subject, and for reasons which are clearly obvious. It is not in the development of the eruption alone that its specific character is to be found, but in its duration and general history. After the lapse of two or three days the raised spots subside and are followed by a second, a third or even a fourth crop. They remain from one to three days and then dis-

perse, leaving the epidermis in a ragged desquamating condition, and the seat of the eruption of a brownish-yellow colour. Shortly after the decline of the eruption a blackish-red spot appears in the centre of the papillæ, probably the result of blood extravasation. Should the fever be intense and the cutaneous inflammation run high, vesicles of various sizes appear on the summit of the pimples. These are charged with a thin, transparent, clear fluid. When the eruption is confluent and the vesicles coalesce the cuticle may sometimes be removed in large layers, several inches square. The virus either escapes by the rupture of the vesicle, or, as less frequently occurs, it becomes charged with pus and dries into a thick dark-grey crust similar to that of sheep-pox; indeed, cases have come under my notice where but for the characteristic differences of the skin itself it would have been difficult if not impossible to distinguish between the crusts. For a short time prior to the eruption dulness of the infected animals is observable and the internal temperature is considerably exalted. The stricken beasts bury themselves in the litter and otherwise express a keen desire for warmth. They are but little disposed to move and will frequently resist any attempt to disturb them. On emerging from their bed a sense of chilliness is made apparent by an attack of shivering which may be slight and transient or severe and enduring. As the dulness increases the face becomes pinched, anxious, and expressive of pain; the eyes are congested, watery, and a thick puriform matter accumulates in the inner canthus and around the lids. At the same time a similar flux occurs from one or both nostrils, and these discharges continue in some instances throughout the attack. Early in the disease the movements become feeble and general prostration soon ensues. Diarrhœa more or less acute appears at various periods in the progress of the disorder and usually continues for some time after the subsidence of the fever. Its duration doubtless depends upon the extent of the intestinal eruption. The stools are of a brownish-yellow hue, and at first pultaceous, but they soon become thin, watery, and offensive. In the later stages of the malady they are discharged involuntarily, and besides blood in various quantities there is often mingled with them soft friable yellowish-grey masses of typhoid exudation, which have been detached from the mucous membrane. The colour of the stools is almost as characteristic as the eruption itself, and only when blood-stained or under the modifying influence of particular kinds of food, such as grass, are they other than of a brownish-yellow hue. It should be remarked

that the entire absence of diarrhœa is by no means an uncommon event in *enteric disease*. Under such circumstances the bowels are constipated, and the fæces hard, lumpy, and coated with thick tenacious mucus. When the intestinal discharge is great, emaciation appears rapidly, and ends in complete prostration. Associated with diarrhœa there is tenderness of the belly. Pressure applied to this part gives intense pain and provokes violent struggling and squealing. Vomition is sometimes present; a symptom which I am disposed to look upon as an indication of the stomach being involved in the eruptive process. The pulse is usually much quickened, soft, and feeble, but the breathing is rarely disturbed save in pulmonary complications. Among the most prominent of the symptoms of the affection are those having reference to the nervous system. Giddiness and stupidity supervene on dulness and end in delirium.

Not unfrequently the diseased animal will rise from its bed and send out a piercing cry as if under restraint, while the entire body will be momentarily convulsed, or it will start up and move about in a confused and unsteady manner. In speaking of this stage of the malady, Mr. Gore says—"My first lot of pigs went entirely blind; they would wander about and fall against the trough or wall or anything in their way. Sometimes they would fall down, and roll, and kick, and seem to be in pain. When they got up, their fore and hind feet were placed together, and they shook like a man suffering from ague." Their eyes are bright and amaurotic, and all the senses are blunted. "Stunned in their heads" was the expression used by the owner of an infected herd in speaking of this delirious condition. With the progress of the disease the body becomes partially or completely paralysed, and the suffering animals lay in a state of semi-coma, exhibiting violent convulsive movements of the limbs, and sometimes of the entire body. On the decline of the febrile symptoms and the dispersion of the rash, extravasation of blood takes place into the structure of the skin, as before remarked. Either scattered petechiæ or patchy redness is the result of this outburst of blood from the cutaneous vessels. The infiltrated tissues soon assume a purple colour, and the body in many cases presents universal discoloration. This last-named condition may, as a rule, be interpreted as indicating approaching dissolution.

As there are no *data* having reference to temperature during the course of pig-typhoid, I have appended a thermometrical table to this paper, showing the variations between morning and evening from day to day, as they

occurred in some of the cases under my own care. Observation must, however, be largely extended before any attempt is made to attach a specific value to the subject. Whether the variations of temperature in this disorder are capable of being sufficiently defined to establish a typical range is matter for future investigation. The symptoms of *enteric disease* are liable to considerable modification, depending upon the intensity of the fever process and the various complications which attend it. Of the latter, peritonitis, pneumonia, pleurisy, and intestinal hæmorrhage are common, and rupture of the gut not unfrequently occurs.

Record of Experiments.

I.—The object of this experiment was to determine if the contagium of pig-typhoid could be transmitted from one animal to another through the medium of the atmosphere.

For this purpose two pigs about six months old were obtained from a healthy herd. On the 21st of April they were put into a house with a diseased pig, brought to the college by Mr. Hussey, of Devizes, and after forty-eight hours' exposure the diseased animal was destroyed. The healthy animals were placed some distance apart from the infected one, and the greatest possible care was taken to maintain complete isolation, not only with regard to the animals themselves, but also with reference to the excreta of the infected pig. The internal temperature was taken in the mornings and evenings throughout the entire course of the malady, and will be found recorded in the thermometrical table. I propose to describe the course of the disease as it appeared in the two pigs separately, and shall distinguish them as A and B.

A.

April 26th.—Slight dulness is apparent, and the evening meal is refused, excepting the fluid portion of it which is drunk with avidity.

27th.—Dulness more marked, skin of face corrugated, and the countenance expressive of pain, seemingly referable to the head.

28th.—The skin is hotter than natural, though no eruption is developed. The eyes are congested and suffused with tears. Food is taken sparingly, but water is drank freely; pulse quick, soft, and weak; breathing very slightly accelerated.

29th.—The temperature of the skin is increased, and a

general redness is visible over the belly and on the inside of the arms and thighs and behind the ears.

30th.—A few round raised spots of a red colour are visible on the breast and throat. Dulness is much increased, and a great desire for warmth is manifested. A watery discharge issues from the eyes, and dirt accumulates around them in black scaly masses.

May 1st.—The discharge from the eyes is thick and puriform, and a watery secretion issues from the nostrils. The eruptive spots are still visible, but the general redness of the skin has subsided, and the heat is less intense.

2nd.—Signs of emaciation are present, and the movements are feeble. The spots are subsiding, and can only now be felt, the redness having disappeared. The general symptoms of illness are less marked, but the thirst is intense, and slight tremors are present.

3rd.—Much the same as yesterday.

4th.—The bowels are constipated, and the fæces streaked with blood and thick tenacious mucus. The lining membrane of the rectum is of a scarlet hue. More food is taken, and the thirst is less severe.

5th.—Skin very hot, and the animal refuses food; the thirst increased, movements unsteady, and rigors are excited by the least exposure.

6th.—A diffused redness is visible over the belly, which is most intense towards the centre; the inside of the arms and thighs is also red, but less so than the abdomen. Great prostration is now apparent, and rapid emaciation is taking place. All the other symptoms are aggravated, and the gait is unsteady.

7th.—A fresh crop of spots has appeared, and the animal seems somewhat more cheerful, though he obstinately refuses food and drinks largely. The stools are soft and of a yellowish-brown colour.

8th.—The face is pinched and very anxious; the eyes are bright, and the lids charged with puriform matter. The eruption is more extensive and decided. Great irritation is manifested by repeatedly scratching the abdomen. The bowels are very loose, and the stools more decidedly yellow.

9th.—Diarrhœa acute, stools of a dirty yellow colour and watery. Prostration increasing. Food altogether refused, but thirst still great.

10th.—Epidermis is desquamating from the seat of the early eruption, and slight moisture is observable on the surface of the more recent spots. The stools are watery and frequent, and pain is evinced on pressing the belly.

11th.—Stools streaked with blood. Belly and inside of

arms and thighs intensely red and hot. The countenance is expressive of stupidity, and slight twitchings of the muscles are perceived at short intervals. The hind extremities are partially paralysed, and the body has a rolling movement.

12th.—The skin exhibits a number of purple patches and small petechiæ. They are especially numerous on the belly and the inside of the thighs. Thirst is very great.

13th.—All the general symptoms are aggravated.

14th.—Same as yesterday.

15th.—Fæces black and stinking. Conjunctival membrane studded with petechiæ; abdomen very sensitive. Nothing is taken but fluids. A feeble grunt is constantly emitted with each expiration, and complete paralysis is present.

16th.—The fæces are less fluid, and excepting where the blood spots and patches are, the skin is now much paler in colour.

17th.—Extreme prostration is present, and dissolution seems fast approaching. The fæces are mingled with blood and small particles of soft grey sloughs. The entire body is convulsed, and as the animal lies the legs are violently jerked towards the trunk.

18th.—The convulsions continued throughout the day. Animal died at 6 o'clock p.m.

B.

April 28th.—Slight dulness is perceptible and the food is partaken of indifferently. There is marked thirst and the skin is hotter than natural.

29th.—Much the same as yesterday.

30th.—The skin is intensely hot and of a deep red colour; dulness is increased and the face slightly pinched.

May 1st—The red colour of the skin is less diffused and now the rash has appeared in irregular patches; the appetite is very fastidious and the thirst intense.

2nd.—A watery discharge issues from the eyes and nostrils; but in other respects there is no perceptible change.

3rd.—A few small red spots exist on the belly and on the throat; dulness is more marked, the skin of the face is deeply corrugated and the countenance expressive of pain. The movements are somewhat feeble and rigors are present.

4th.—A few more spots have appeared, and on some of yesterday's crop a little moisture is visible.

5th.—Food is entirely refused and the animal is evidently much weaker, the pulse is quick and feeble, the bowels constipated and the discharge from the eyes and nostrils is assuming a puriform character.

6th.—A fresh eruption of spots has occurred on the inside of the arms and thighs and behind the ears; they are very numerous and in some places confluent. The spots erupted on the 3rd have entirely disappeared, leaving the epithelium raised and desquamating. Prostration is great and shivering is excited by the least exposure.

7th.—There is no perceptible alteration.

8th.—The countenance wears a stupid expression. The conjunctival membrane is much injected, the skin is intensely hot, especially on the abdomen; the primary spots are turning of a yellowish-brown colour, but those of the second crop are subsiding.

9th.—The prostration is very great and the gait unsteady. The spots have nearly entirely disappeared. On the inside of the thighs are two large vesicles and two others are on the breast. Diarrhœa is now present, and the fæces are very offensive; the skin is much cooler and less red than at any time during the eruption. The tips of the ears are of a bluish-red colour.

10th.—The vesicles* are increasing in numbers and some are confluent; there is considerable emaciation and the slightest exertion gives rise to a fit of coughing; there is every indication of pneumonic complication.

11th.—Vesication is extending and large layers of epidermis may now be removed from the seat of the confluent vesicles. Diarrhœa is very acute, the stools are of a yellow colour, fluid and offensive. The animal rises with difficulty and rolls from side to side in progression. Vision is much impaired. The breathing is quick and panting. Pressure to the abdomen excites struggling and squealing, the latter is very feeble and plaintive and attended with coughing.

12th.—Emaciation is rapidly increasing and there is complete prostration, with low delirious grunting. The skin is turning purple in patches and petechial spots are scattered over the abdomen. Some of the vesicles are refilling. The extremities are cold and the breathing is quick and hoarse.

13th.—This animal died after being in a comatose condition for several hours.

* A number of "ivory points" were charged with the virus from these vesicles for inoculating purposes. See Experiment II.

*Pig Typhoid Thermometrical Table.**

EXPERIMENT I.

A.

Date.	Morning. Degrees.	Evening. Degrees.	Date.	Morning. Degrees.	Evening. Degrees.
April 20	103·2	103·8	May 5	102·4	105·2
„ 21	102·6	103·6	„ 6	106·	104·6
„ 22	103·4	103·6	„ 7	104·	104·6
„ 23	103·0	103·2	„ 8	104·4	104·8
„ 24	103·2	103·2	„ 9	104·6	104·
„ 25	103·	103·4	„ 10	103·	104·
„ 26	103·2	103·2	„ 11	104·	105·2
„ 27	103·6	103·2	„ 12	105·	105·
„ 28	104·	104·2	„ 13	104·	104·
„ 29	104·	104·6	„ 14	104·	105·
„ 30	104·2	104·6	„ 15	106.	106·4
May 1	104·6	105·	„ 16	103·6	103·
„ 2	105·	106·4	„ 17	103·8	102·
„ 3	104·8	105·2	„ 18	96·6	
„ 4	105·2	105·			

B.

Date.	Morning. Degrees.	Evening. Degrees.	Date.	Morning. Degrees.	Evening Degrees.
April 20	103·2	103·2	May 2	103·	104·
„ 21	102·	103·2	„ 3	103·8	104·8
„ 22	103·2	102·6	„ 4	105·2	105·2
„ 23	102·6	103·	„ 5	104·	105·4
„ 24	103·	103·2	„ 6	105·8	105·2
„ 25	103·4	103·6	„ 7	104·8	105·2
„ 26	103·6	104·	„ 8	106·2	105·2
„ 27	103·6	103·4	„ 9	104·6	103·
„ 28	104·	104·2	„ 10	104·	104·4
„ 29	104·2	104·6	„ 11	101·8	105·2
„ 30	104·	104·6	„ 12	96·8	
May 1	103·6	104·			

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THE PRINCIPLES OF BOTANY.

By Professor JAMES BUCKMAN, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 501.)

THE SAXIFRAGALES — THE SAXIFRAGAL ALLIANCE — now to occupy our attention is as remarkable for the beauty and variety of its forms as for its general want of any active principles. The Saxifrages are united into five natural orders, which though possessing few genera, yet many of them are

* This table dates from the day prior to that of exposure.

remarkable for a rather large list of species; three of these may now occupy our attention, as follows:

1. *Saxifragaceæ.—Styles distinct; leaves alternate.*

2. *Hydrangeaceæ.—Styles distinct; leaves opposite, without stipules.*

3. *Lythraceæ.—Styles consolidated; calyx tubular, permanent, with the petals in the margin; leaves opposite.*

Of these the first and last are remarkable for containing some interesting native species, whilst in the *Hydrangea* we have in the genus upon which the order is founded several exotic species notable as ornaments to the conservatory and flower garden.

1. *The Saxifrages* may be said to be confined to the northern climates, as none are produced in tropical countries. Lindley says of them that "they are little herbaceous plants, usually with white flowers, cœspitose leaves, and glandular stems; some of the species have yellow flowers, others have red, but none blue. They are natives of mountainous tracts in Europe and in the northern parts of the world, frequently forming the chief beauty of that rich turf which is found near the snow in high Alpine stations. Some grow on rocks and old walls, and in hedgerows, or near rivulets, or in groves." Under the natural order *Saxifragaceæ*, Dr. Syme places three native genera, namely—

Saxifraga, Saxifrages.—*Calyx superior, or inferior, or half inferior*, in five segments; corolla of five petals.

Chrysosplenium, Golden Saxifrage.—*Calyx superior*, 4 *to* 5 *cleft, somewhat coloured; corolla O.*

Parnassia, Grass of Parnassus.—*Calyx deeply* 5 *cleft; petals* 5; *nectaries* 5, *heart-shaped, fringed with globular-headed filaments.*

The Saxifrages proper form a large genus of wild plants. Dr. Syme in the new edition of the 'English Botany' figures no less than twenty-two forms, prominent among which are the different species and varieties of "London Pride," many of which are cultivated in the streets and alleys of London, as well as in the cottages of the country poor, while many forms of the genus ornament the greenhouses, hanging baskets, and rockeries of the wealthy. Most of the species clothe the higher mountain tops, and hence their use by the old herbalists in lithontriptic diseases, from which indeed their name is derived—from *saxum*, a stone, and *frangere*, to break—upon the doctrine of signatures, which would tell us that, inasmuch as the roots penetrating the fissures of a rock and probably aiding in its further disintegration, so taken medicinally it would have the same action in cases of stone

in the bladder. There is a species called meadow saxifrage (*Saxifraga granulata*), a very beautiful wild plant, a double form of which is frequently met with in gardens, which has been held in high repute as a remedy, upon which we find the following notes in 'Saxon Leechdoms:'

"*Saxifraga granulata—Sondcorn.**

"1. This wort, which is named Saxifrage, and by another name, sundcorn, is produced in downs and in stony places.

"2. In case that stones wax in the bladder, take this wort, which we now named Saxifrage, pound it in wine; give it to the sufferer to drink, and to the feverish in warm water, so present, *that is, in the Latine sense, effective*, it is, that of it it is said, by those who have tried it, *namely the experiment*, that it, *namely* the wort, breaketh to pieces the calculi the same day, and it tuggeth them out, and leadeth the man to his health." (Vol. i, 'Herb.,' xcix.)

Upon this subject we find the following remarks in the new 'English Botany,' probably from the pen of the late Dr. Lankester:

"Notwithstanding the popular name of the Saxifrages, they really possess no such powers as are attributed to them; and the only way in which they could have even afforded relief to sufferers from calculous diseases must have been by their mucilaginous nature, which may possibly be the case. The granulated roots of our present species, resembling as it were small motes, were confirmations strong to the signature physicians of bygone times of the potency of the plant in calculous complaints; and as its white flowers indicated that it was governed by the moon, its credit remained long unquestioned by such as, led by astrologers, believed that the heavens

> "'Shed down their stellar virtues on all plants
> That grow on earth, made thereby to receive
> Refection from the sun's more potent ray.'"
>
> —'English Botany,' vol. ii, p. 78.

The Golden Saxifrage.—We have two native species sometimes found growing together by the sides of ditches and damp places. It has been named from a combination of colour and quality—from χρύσος, *gold*, and σπλὴν, the *spleen*—as it was supposed to possess great virtues in the cure of diseases of the spleen. We have, however, never heard of its employment even by the simpler or the rustic.

The Grass of Parnassus is placed by Sir W. J. Hooker in the order *Hypericiniæ*, but we prefer taking it in this

* Sond- or sundcorn—*sand*corn—is an old Saxon name for this plant, from *sond*, sand.

place, as has been done by Dr. Syme, though its place has been so many times changed by different authors as to have got for it the description of "an anomalous genus."

It is a most lovely plant, locally found in bogs, ditches, and moist places. We have found it in such places as the Cotteswold district, and its bright silvery petals and elegant form well entitle it to all the praises that have been lavished upon it. "It takes its name from Mount Parnassus, where, owing to the elegance of its flowers, it is fabled to have been produced." *

We have but one single English species, but others are found in Europe, Asia, and North America, and Dr. Bentham justifies his placing of it with the Saxifrages in the following words:

"It has been most generally placed amongst *Thalamiflores*, with *Sundews*, next to the *Violet* and *Milkwort* families; but its close affinity with *Saxifrage* and *Chrysosplene* has now been fully proved, especially by the recent publication of several curious Himalayan species.†

Mrs. Lankester says of the *Parnassia palustris* that "this elegant plant is worth the attention of those who love to surround themselves with things of beauty. Plunged into water in a garden pot, it will continue in blossom for many weeks, care being taken that it be removed originally with a ball of its native earth around its roots."

We can verify this from many plants in our study for a lengthened period kept merely in moistened moss.

2. *The Hydrangeaceæ—Hydrangeads*—may be studied in most greenhouses and gardens, but beyond being highly ornamental plants we know of little in their favour. Prof. Lindley says of them—

"None of these appear to be of much use to man. Hydrangeas have been cultivated as garden ornaments from the most ancient times in China and Japan. The leaves of *H. Thunbergi* are dried in Japan and used as a kind of tea, which from its excellence they call Ama-tsjâ, or tea of Heaven."‡

The Hydrangea is a great favourite with the amateur gardener, who, especially when living by the sea-side, rejoices in his purple-flowering plants. In an inland situation, a variegated-leaved variety, with large blush-coloured corymbs of flowers, affords at this time a great charm to our conservatory.

* 'The Treasury of Botany,' vol. ii, p. 848.
† 'Handbook of British Flora,' p. 233.
‡ 'The Vegetable Kingdom,' p. 570.

3. *The Lythraceæ* is well represented by the *Lythram salicarea*, purple zosestripe, and the *Hissopifolium;* the former a characteristic tall purple-flowered perennial plant of our rivulets and marshy places, whilst the latter is of rare occurrence, according to Hooker, in "moist and occasionally inundated places in the east of England."

They have no medicinal value, and, indeed, like the whole of the Alliance, they are remarkably innocent; but yet, on the whole, the Saxifragales are really remarkable for beauty both of form and colouring, and so they are destined to hold a lasting position of importance to all lovers of the beautiful in flowers.

OBSERVATIONS ON PARASITES, &c.

By R. Spooner Hart, M.R.C.V.S., Calcutta.

In a letter addressed to Prof. Simonds Mr. Hart writes (respecting the entozoa acknowledged in the previous number) as follows :—

My dear Sir,—I managed, through the kindness of a friend, to send to England a box containing several specimens for the College museum, or as you may think best to dispose of them according to their value or otherwise. I have directed my brother, who is now a student at the College, to hand the box over to you immediately it comes to hand, and I hope the specimens will arrive in a good state of preservation. I only apprehend fear with one, which is a somewhat colossal example of Melanoma which I removed *post-mortem* from an old white English mare which had been in the country many years. In the same tin you will find portions of the large gut from the same subject exhibiting sacculated or pouch-like cavities or cæcal appendages with openings into the bowel. Perhaps these pouches may have contained melanotic matter at some time or other; and the deposited matter, having undergone softening and decay, had gained an entrance to the bowel and was thus got rid of. On the other hand, they are not unlike the empty cavities or ex-abodes of the *Spiroptera megastoma* so frequently seen in the stomach of the horse, or they may be instances of excessive developments?

Specimens labelled II and III speak for themselves. They are examples of fractured sesamoids, cases of somewhat common occurrence in Calcutta. The small gumlab, labelled I, contains the sesamoid bones of the corresponding leg of the pony to the one before you. The bones have been sawn

asunder, thus exhibiting their diseased structure, which is more particularly marked at the points of attachment of the suspensory ligament.

Specimens 22, fractured tibiæ.—There are on record many cases of horses sustaining a fracture and then performing long journeys, but the history of the following case, from which I preserved the tibiæ before you, is of an interesting and somewhat unusual character:—The subject was a grey mare, brought to me by the owner for examination respecting the mare going stiff and sore behind. I trotted the mare a few paces and confirmed what the owner complained of. I attributed it to the state of her hocks and suggested a few days' rest, &c. I detained the mare, and the next morning, after walking to the horse-trough and back to her stall, a distance in all of about fifty yards, on being turned round in her stall she suddenly fell down behind. I was immediately called, and recognised at once fractured tibiæ. I apprised the owner of what had taken place, and I had great difficulty in convincing him that the bones had doubtless been fractured before the mare was admitted to my care. On examination of the bones there was some sign of a provisional callus, and yet it is very difficult to conceive how the bones could have remained fractured so long without displacement occurring. The owner could not account for the injury; the mare was out of daily work, and his incredulousness regarding my statement as to the time of occurrence of the fracture was not so much to be wondered at. This case is illustrative of an instance in which one runs considerable risk of litigation, for seeing that the actual displacement of the fractured bones took place whilst the mare was in my infirmary, and that I had after a casual observation attributed the stiffness of her gait to the state of her hocks, as a result of hard and continued work, it would probably offer sufficient inducement to a litigious individual to take the case into court, where probably a large amount of explanatory evidence would be required.

No. 4. A bottle labelled, "Worms from the fæces of a horse." These I found enveloped in the pellets of dung composing the horse's stool. At first I thought they were the *Oxyures,* or whip worms, but from their not being quite so filiform, &c., I was induced to preserve them.

No. 5. A bottle labelled "From the wall and amidst the contents of the rumen of the ox." These appear to me to belong to the class *Annulosa,* or leech family. They are very frequently met with in very large numbers on making post-mortem examinations of the ox. On first opening the rumen

they emit a peculiar noise, apparently the result of oral movements, for all those found loose amongst the contents of the viscus will be observed to be constantly opening and shutting their mouths. They are of a pale blood-colour, and possess the power of elongating and shortening their bodies in leech-like fashion. Probably when fully elongated they are the best part of three quarters of an inch in length, but on putting them into spirit they shrivel up, and after being in spirit a short time the small round bodies which you see loose in the bottle escape from the oral cavity. Having but very little cattle practice, I am not aware whether these parasites are productive of much mischief, but their blood-colour is suggestive, and when aware of their presence I prescribe salt.

No. 6. A bottle labelled "Found attached to the inner surface of the stomach of the rhinoceros; these appear to be a variety of bot of somewhat unusual size."

When first removed from the position I found these larvæ, they, without exaggerating, I think were as long as one's little finger. A rhinoceros with fatal diarrhœa is not a case of daily occurrence, so that I cannot give any further information regarding contents of bottle No. 6.

No. 8. A bottle containing "grmn"—the grain upon which horses are principally fed in India.

In addition to this box you will also receive a much smaller one, which I despatched per S.S. "Eldorado." The two boxes will probably arrive to hand about the same time. The smaller box contains a bottle in which you will find two portions of the colon which I preserved from two *post-mortem* examinations of freshly imported Australian horses. The two portions of gut exhibit at least two species of parasites beneath the mucous membrane or encysted in its substance. The one kind, and by far the most numerous, I think Dr. Cobbold will pronounce to be a species of *Strongle* (*S. tetracanthus*) in various stages of growth. I have been more or less intimately acquainted with the *S. tetracanthus* for the past four years, principally as having come across them in most of my *post-mortems*. These worms are extremely common and especially so in freshly imported Australian horses. I have witnessed the cæcum, colon, and rectum loaded with them, particularly the cæcum; whilst in other cases I have seen the contents of the colon one prodigious living and moving mass of parasites. The worms are more numerous in the mucous membrane of the cæcum and colon than in the rectum. These worms, from their extreme numbers, are highly pernicious, and they are productive of an immense amount of mischief to the animal economy, respecting

which I shall defer making comment until some more fitting occasion. In the way of a passing remark I will just briefly allude to one condition out of many which the bowels present in these cases, and that is the appearance of the mucous membrane after the parasitical guests' lease of residency has expired. It will then present a densely pitted appearance, more conspicuous at the end of the cæcum, and so much is this the case when the worms have been very numerous that it is a matter of amazement to me why the membrane does not slough.

Respecting the part these worms played in the pony epidemic (*vide Veterinarian*, June, 1874) in South Wales—there is not the least doubt that Mr. Rees Lloyd was correct in his opinion—the symptoms exhibited were pathognomonic and in the main analogous to what one sees in sheep consequent upon the presence of large numbers of the *Filaria hamata* in the true stomach.

The smaller of the two portions of gut in the bottle contains but one worm of somewhat large size ; this one was also beneath the mucous membrane. I have slit up a portion of the membrane to expose the worm, so that the motion of the ship may have dislodged him from the site in which I found him ; if so, you will find him loose in the bottle. I am not aware of the name of this parasite, but I may mention that it is very like in appearance and as regards size to three worms which Mr. Rowe, of Barrackpore, discovered in a horse beneath the peritoneum opposite to about the flank. These worms were unfortunately lost. The experience of many *post-mortems* enables me to state that as a rule the other equine parasites are met with only in but very limited numbers, and in addition to this I have been called upon but very seldom to prescribe for worms in horses. I have seen instances of the presence in one subject of nearly the whole number of the parasites which are known to patronise the horse. I have only found tape-worms once in the horse. The large-headed ascarides are occasionally met with in very small numbers ; indeed in some instances not exceeding one, in the stomach, or two or three in the duodenum, where their presence appears to give rise to a free flow of bile ; or you may meet with a few of them in the large bowel. The *Strongylus armatus* is sometimes seen in large numbers, but in the majority of cases but few are met with ; the *Oxyurides* are likewise met with in very limited numbers. Instances of worm in the eye (*Filaria papillosa*) are not of very common occurrence in Calcutta. I have operated upon about forty cases during a period of six years. These cases were of more common

occurrence formerly. The *Spiroptera megastoma* are extremely common in all classes of horses in Calcutta. The *Spiroptera microstoma* I have met with only on one or two occasions, and then in very large numbers. I have met with Flukes once or twice in the cæcum and colon of the horse; but do not remember ever coming across them in the usual way of dealing with the liver on making post-mortems.

REMOVAL OF A NEEDLE FROM THE PHARYNX OF A MARE.

By George Kettlewell, Veterinary Surgeon, Stud Department, Kurnaul, Punjaub.

In the month of May, last year, the brown mare "Schoolgirl," by "Lopcatcher," T.B.E.,* out of "Governess," by "Sotterly," T.B.E., was admitted into hospital for sterility. She had been three years on the brood-mare list at this stud, and had given no produce within that period, and was barren on admission.

The mare had been broken in and was used in harness. She had all the appearance of a stable-fed mare in hardy condition and was noted as a sound and wiry animal with a good constitution.

On exploring the uterine cavity, with a view to discover the cause of sterility, I found the os uteri partially indurated, with closed cervix, the parts being covered with a glairy, viscid secretion in profuse quantity, clinging to the cervix and interior of the womb.

Having dilated the os and cervix uteri to the fullest practicable extent in this the first examination, and removed the greater part of the secretion about the passages, the mare was put to the T.B.E. stallion "Lord-in-Waiting," by "Rifleman."

She showed regular œstrum, but the "cover" was rather an imperfect one to all appearance, as just towards its close, as the stallion withdrew, the mare curved her back and emitted a great portion of the seminal fluid.

I ordered her back to hospital immediately after the hobbles were removed, and she was placed in a loose box, isolated, and kept as dark as possible.

* The letters T. B. E. stand for thorough-bred English.

She was allowed no corn, as usual in the treatment of most cases of this kind, but she had a fair allowance of bran mash daily and green-meat, and a lump of salt was kept constantly in her manger.

The mare was shown to the "Teazer" every seventh day from date of "cover" on the 11th May, but she showed no signs of return of œstrum on any occasion. After she had passed three weeks from date of "cover" she was allowed (as is usual) full liberty to roam about freely on the grazing grounds, being kept in her box only during the night and for a few hours during the hottest part of the day.

While under treatment and observation, I happened one morning early in July to observe, after the mare returned from the grass lands, that she had great difficulty in swallowing, and that the water given her to drink was returned through the nostrils.

I carefully examined her, but could detect nothing in the throat. I then passed a probang, armed with a sponge well oiled, into the stomach without meeting with an obstacle of any kind.

I also passed my hand into the pharynx as far back as I could, but failed to detect anything.

The next day the patient was no better.

I then passed a small flexible tube up the nostril, and I found that an obstruction existed at the superior part of the pharynx, which by a little manipulation I overcame and succeeded in passing the instrument into the œsophagus. I subsequently withdrew it and then passed it several times freely enough without again coming in contact with the obstruction.

As long as the mare abstained from taking soft food or liquids she was perfectly easy; but the moment she attempted to swallow even thick gruel the spasms in the throat commenced and the liquid was returned through the nostrils. At this stage of the case I felt sorely puzzled to know what the obstacle could be, and more so as to the means for relief.

By the mouth the probang passed easily enough into the œsophagus, and it was only at times when I passed the small flexible tube through the nostril that it came in contact with some hard substance.

The patient was cast, and one of the hospital assistants, with a much smaller hand than mine, explored the pharynx, but without any result.

The case appeared now to be hopeless, and although the mare

was supported by nourishing enemas combined with stimulants she was rapidly losing flesh.

On the 9th July, finding her no better and getting weaker almost every hour, I determined on an operation by cutting down on the pharynx behind the jaw.

The patient being very quiet, even after all the handling she had been subjected to, I decided to operate in the standing posture, having the head well secured.

I commenced by making an incision on the left side through the integument three inches long, and from the border of the jaw over the parotid gland backwards and downwards in the direction of the œsophagus, and through the posterior border of the gland. The incision was continued through the subcutaneous muscle of the neck along the lower border of the lavator humeri into the interstice known as the jugular channel, keeping to the upper part of the vein. Here it required nice and accurate dissection to avoid the vessel.

All this time an assistant kept his hand firmly fixed on the right side of the neck, keeping the parts well over to the left. I next divided the aponeurosis, uniting the lavator humeri with the sterno-maxillary muscle in front, and carefully felt for the carotid artery ; continuing the incision below this vessel, and leaving a nerve, which appeared to me to be the hypoglossal, to my left, I cut right into the upper part of the œsophagus just where it terminates in the pharynx.

I then passed my left index finger into the back of the pharynx. Just at this moment my finger was grasped firmly and pierced partly through its point by a sharp, hard substance, and the mare throwing up her head, it was with some difficulty I released it, as the assistant could not get her head down again ; but a fit of coughing coming on I got my finger out, bleeding pretty freely.

All attempts to explore the incised parts again at this stage were fruitless, and not wishing to use much force I was ultimately forced to cast the patient, having secured two small vessels, the only ones from which there was any hæmorrhage to speak of.

Once the patient was down I passed the forceps directed by the finger into the pharynx, and at once came in contact with the obstacle—a piece of iron, or a nail, as I thought at that time.

The moment I attempted to extract it violent spasms of the muscles of the larynx and pharynx ensued.

To get at the point of the foreign body I had to pass a probe-pointed bistoury in and extend the incision into the

roof of the pharynx, and now, by the aid of a pair of straight bone forceps, I caught hold of the body firmly, but to extract it I had to pass it backwards in the direction of the head. To my surprise it proved to be a thick-sized, straight needle with very coarse eye-piece and jagged edges, just about $2\frac{1}{2}$ inches long. It was imbedded in the upper part of the pharynx, lying in a direction with its course.

It would appear to have altered its position after I placed my finger on it the first time. Possibly the violent spasms of the muscles of the whole of the neck just then might have forced the needle onwards above the roof of the pharynx.

After passing sutures through the pharynx and œsophagus, and bringing the incised edges evenly together, I released the patient, and the moment she got up she drank some water, which passed into the œsophagus, not a single drop escaping by the side of the neck.

The mare swallowed some thick gruel also quite freely, the first fluid that had passed down since the choking fit was noticed. Sloppy bran in mash caused coughing and was withheld. Enemata of thick gruel and stimulants were administered, the mare lying down the greater portion of the day, which she did not attempt to do before.

Her pulse was 96 and feverish; weather extremely hot and muggy, with scarcely a breath of air; thermometer standing in the shade at 95° Fahr.

In the evening one of the hospital assistants came in great haste to say that the mare was sinking rapidly, and as I got to the hospital, at 6 p.m., she died, just $7\frac{1}{2}$ hours after the operation.

I made a post-mortem examination immediately after removal of the carcase from the hospital. I found the mare to be pregnant to the cover of the 11th May previously, just about two months gone.

It became dark so soon that I had the head and neck removed for examination on the following day: neither time nor opportunity permitted for closer examination of the other organs.

I cut down on the pharynx from the right side, the opposite one to which I operated, and exposed the cavity or vestibule common to the digestive and air passages. Found the part where I had made the incision, which was only about $1\frac{1}{2}$ inches in extent, at the end of the pharynx and commencement of the œsophageal canal. The marks of the needle, where it had lain right across the tube at first, were quite visible. Afterwards it became inserted into the upper and back part of the pharynx, piercing the muscular walls at the back or roof of this organ, becoming ultimately

imbedded in the curve which the pharynx and œsophagus take at this part. The lining membrane of the pharynx, was ulcerated, torn, and ragged; but further down the continuation of this membrane into the œsophagus was entirely free from ulceration and even inflammation. The lining membrane of the larynx and epiglottis were inflamed, that of the epiglottis particularly so; otherwise the structures in the vicinity were healthy, apparently. One of the small vessels cut during the operation on the left side I found to be the small thyroid branch from the carotid.

The recurrent, pneumogastric, and great hypoglossal nerves at the left side of the neck were quite intact.

REMARKS ON GLANDERS AND FARCY.

By A. J. Murray, M.R.C.V.S., Detroit, Michigan, U.S.

Among British veterinary surgeons it is generally held that glanders is an incurable disease. Professor Gamgee's recommendation is that glanders, being an incurable affection, any animal suffering from it should be instantly destroyed. This represents the general opinion of the profession. It does not appear, however, that this opinion obtains so generally in other countries. The treatment of glanders by arsenite of strychnia has been advocated by MM. Ercolani and Bassi, though no permanent cures were obtained from its use when tried by MM. Bouley, Ringuet and Signol; see 'Edinburgh Veterinary Review' for April, 1862. In the June number of the same journal, however, Professor Hering is reported as saying "that he is much in favour of arsenite of strychnia.

In this country many practitioners state that glanders is curable, so that the proposal to destroy glandered horses frequently meets with much opposition. I may mention that it has been my practice to recommend the destroying of glandered horses whenever they have been brought under my notice, as I have been unable to detect any peculiarity in the disease which rendered it more amenable to treatment here than in Europe.

On the 9th of June, 1873, I examined a horse and a mare which had been turned out to grass about four miles from this city. Both were affected with glanders and farcy and would have been at once destroyed if my opinion had been adopted. It was, however, desired that they should be placed under treatment, which was accordingly done. Both were

destroyed two weeks afterwards, and showed the ordinary *post-mortem* lesions of glanders. On subsequent investigation I ascertained that this disease had been introduced by a sorrel-coloured mare which had been bought a month previously and placed in a stable where there was a large number of other horses. At the time of her purchase she had a nasal discharge and swollen submaxillary glands; but this was thought to arise from distemper. On seeing her, however, shortly after examining the two first-mentioned horses, I found her to be affected with glanders and that the disease had affected six or seven other horses as well. On this being ascertained it was thought best to remove all the glandered horses and one or two farcied ones to a stable by themselves. A number of cases of glanders and farcy occurred subsequently, however, in the same stable, until between thirty and forty horses had become affected with glanders and farcy. Those horses were all placed under treatment. A few cases were treated differently from the others, but in the majority of cases they received iodide of potassium and gentian three times a day for ten or twelve days, and then the treatment with arsenite of strychnia was commenced by giving it in two or three grains doses daily. The latter dose in some cases produced muscular spasms and had to be diminished. Some of the horses under treatment were trephined and local as well as general treatment applied. The horses were well fed and regularly exercised, and a temporary stable which had been built expressly for their accommodation was so constructed as to supply them with pure air *constantly*. These horses were under treatment during the months of June, July, August and a part of September, but though placed under the best hygenic conditions, and treated with medicines which have received the highest commendation from those who claim glanders to be curable, not a single glandered horse recovered. A large proportion of the farcied horses recovered; these received the same general treatment as the glandered ones. As to local treatment the farcy buds were freely opened and then cauterised with the hot iron, though subsequently nitric acid was used as a caustic and apparently with advantage.

The recovery in several of the cases of farcy was not permanent, for on being put to work several of them shortly afterwards showed symptoms of both farcy and glanders and had to be destroyed. Most of the other cases were lost sight of and their history could not be followed up. The *post-mortem* lesions did not differ from those usually observed in such cases. The parts examined were the nasal cavity and

the sinuses of the head. In most cases there were numerous ulcerated patches on the septum nasi, and the membrane lining the sinuses was more or less coated with lymph. This leads me to remark that even though an ulcer which is visible during the animal's life may cicatrise the nasal membrane beyond our inspection may be extensively ulcerated. In all of the cases examined the lungs were but slightly diseased. There were a few small deposits in the lungs, seldom larger than a pea and sometimes smaller, called by the French veterinarians "miliary tubercles." In some instances these were not readily found.

Most of these cases assumed the chronic form and the diseases advanced slowly.

It does not appear that these diseases are more curable here than in Europe, and though this to some will appear a truism it is hoped that the short account which has been given will not prove valueless.

HYDROPS PERICARDII.

By Harry Olver, M.R.C.V.S., Tamworth.

A well-marked case of this somewhat rare disease having come under my notice, I send you a short history of it, thinking that it may be interesting to some members of the profession, as it tends to show that this disease may exist for some considerable time without attracting particular attention from the ordinary observer.

On the afternoon of the 31st of March Messrs. J. & J. S. Glover, of Weeford Park, requested my attendance to a horse which they supposed was suffering from a "stoppage of the bowels." On my arrival about six p.m. I found my patient, a four-year-old well-bred bay gelding, to be looking thin and very unhealthy in his coat, as if he had been badly fed. On inquiry I found that he had been lent to the Messrs. G. to ride and drive by a friend the day previously to my being sent for, and that he had been ridden about twelve miles, but only at a moderate pace; and I was informed had not eaten since, nor passed any fæces. He did not show any symptoms of pain, but was very dull, and stood hanging his head on the manger, occasionally sighing, and only moved on being compelled; the visible mucous membranes were pallid, the body and extremities were warm, and the breathing natural; the pulse was 54, very weak and soft; on making him walk he appeared listless and tired. On ac-

count of the pulse being in such an unsatisfactory state, I gave an unfavorable prognosis, and did not feel justified in administering strong purgatives. I consequently ordered Ol. Lini Oss. to be given every three hours with Spts. Amm. Arom. ℥ss. and Æther. Chlor. ℥ss. I also administered glysters.

On my again visiting him the following day I found the same symptoms present, but the pulse was now increased to 65 and was weaker; the animal still stood with an anxious expression, and sighed more frequently; the breathing was still normal, and he evinced no signs of pain. As there had been no evacuation of fæces I administered Aloes Sol., ℥v, Æth. Nit., ℥j, old ale, Oj. On the evening of the same day he began to show signs of pain by restlessness, occasionally turning the head to the side; the pulse was quicker but still oppressed and could not be felt on the jaw; there was an expression of great nervous anxiety. I now gave Æther. Sul., ℥j in ale every hour, and applied hot rugs to the abdomen.

The owner of the animal being now present, I gleaned the following particulars:—The horse was purchased as a two-year-old out of an Irish drove. He was kept well, and everything went on satisfactorily for twelve months, when he was put into the breaker's hands. When the breaking was nearly finished it appears that "Mr. Breaker," unknown to his employer, took the colt to meet the hounds, and galloped and knocked him about all day. On reaching home the horse was taken ill, was very feverish, and did not eat anything for several days, but under proper treatment he seemed to get pretty right again, but never afterwards regained his previous bloom. On his presumed recovery he was turned into a good pasture, and was supplied with corn every day; yet he always looked bad and thin, lost his belly, and never regained his pluck. On winter approaching he was well taken care of, and fed in the same liberal manner, without any better result. About a month before my attention was called to him the owner requested the Messrs. G. to keep and use him for a time; they seeing that he was very low in condition fed him liberally, and used him but little, the twelve mile journey which he had the day before being taken ill was the longest which he had done.

This history of the case greatly assisted my diagnosis, and I gave an opinion that some injury done to the horse twelve months previously still existed, and from the state of the pulse, mentioned the heart as being likely to be affected, but gave no hopes of recovery. About 4 o'clock a.m. on the 2nd of April the horse died.

On making a post-mortem examination I found the whole of the viscera of the abdomen healthy, excepting the kidneys, which were enlarged and soft. The intestines contained only a small quantity of thin ingesta. On opening the thorax the lungs were found to be somewhat congested, and the pleura indicated slight inflammation at some previous date. The pericardium was greatly distended and contained upwards of a gallon of serous fluid, with flakes of lymph floating in it; the heart itself was blanched and soft.

This case seems to me to be interesting in so far as everything connected with it tends to prove that this four-year-old horse was suffering from hydrops pericardii for apparently twelve months without showing to an ordinary observer any signs of illness beyond a general unthrifty appearance.

VOMITION IN THE HORSE.

By John Young, V.S., East Calder, Edinburgh.

The unfrequency of this act in the horse—judging from the few cases recorded—induces me to trouble you with the particulars of a case I witnessed a few days ago. In the September number of last year's *Veterinarian* there are some cases recorded by Mr. Gerrard, Market Deeping, who believes that the action of the stomach itself is sufficient to cause vomiting, and that when rupture of it does occur it is the result and not the cause of vomiting. Two cases of vomiting in foals from which the animal recovered are also recorded by Mr. Gray, of Newbury, in the January number of the journal for this year.

That rupture of the stomach of the horse may be caused by the efforts made to empty itself when all the conditions necessary for the act are present seems quite probable; but that it does so of a necessity is not true; neither does the converse hold good as some believe, *viz.* that vomition can only occur when rupture has taken place. There are few who now doubt, I should think, that vomition can occur in the horse, however it may be induced, or by whatever means accomplished. The importance of the subject must form my excuse for referring to it by narrating the following case.

About 5 p.m., on the 24th March last, I was called to attend a grey Belgian horse, six years old, the property of Messrs. W. and J. Jenkinson, Brewers, Leith, which had been taken ill while at work during the day. On

arrival I found the horse suffering from flatulent colic, accompanied by vomiting. A discharge or vomit of a greenish fluid came from the nostrils every ten to fifteen minutes, the animal at times actually screaming with pain: it was followed by gulping. By the usual remedies, gas was dispelled; but the vomiting and gulping continued for four hours. It was accompanied with a spasmodic action of the throat, the head being drawn down previously to the eructation and discharge of the contents of the stomach. When the animal was recumbent the vomition occurred oftener and with greater severity than when he was standing.

I gave Spts. Æther. Nit. combined with Tinct. Opii and Carb. Soda, which allayed the irritability of the stomach. The animal improved, but was very weak the next day, but was able to resume work on the 27th. On making inquiry as to the cause, the driver informed me that the usual food supplied to the horse consisted of oats and beans, of which he had a feed about 12 o'clock at noon, but that he had no water after that time. The driver added that, while waiting about three hours before I saw him, he had partaken of some grass at the roadside. This I thought might probably be the cause, as grass cannot be said to be good at this time of the year, besides which it might possibly have contained some poisonous weed.

REMARKS ON "MACKCAM'S" QUERIES.

By "CENTAUR."

IN the last number of the *Veterinarian* "Mackcam" gave us a very doleful catechism on general topics. It had, however, the merit of suggesting a remedy, and I believe most of your readers will agree with him as to the desirability of securing to the profession the title of veterinary surgeon.

In conversing with other members on this subject I have heard two different stories about the right to use the title of veterinary surgeon. One friend tells me we can do nothing to prevent any man from so calling himself, whilst another tells me the Charter of the Royal College of Veterinary Surgeons distinctly limits the use of the title to "members," but unfortunately no penalty was inserted in the Charter, and that it is only necessary to rectify this error to make the Charter perfect. Will you, Mr. Editor, decide the matter for us?

I can scarcely believe that "Mackcam" wishes to confirm the use of the title veterinary surgeon by the whole herd of men who have assumed it. Certain it is there are many good men and true practising without a diploma, who would be little benefited by the bestowal of one upon them; but there are a still larger number so utterly ignorant that it would be quite out of the question giving them the honour of even mentioning them in an Act of Parliament. If all we require is to get a clause inserted, inflicting a penalty, it really seems but a small matter; if otherwise some middle course must be formed and I beg to suggest one, not altogether new, as follows:

The Royal College of Veterinary Surgeons should admit any practitioner of five years' standing, not as a member but as a registered veterinary surgeon, upon the production of a certificate signed by two magistrates, or two aldermen of a city or borough, or two professors of a recognised veterinary college, on his submitting to a modified examination, with payment say of £5 for expenses incurred.

Surely this concession would be better than going on at the present rate, with about four unqualified to one qualified practitioner.

Pathological Contributions.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the month of June, 1875, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

"Also, whether the Foreign Ports from which the Animals are brought are in Scheduled or Unscheduled Countries, and the Number of Healthy Animals brought in the same Vessels with the Diseased Animals, and the mode in which such Healthy Animals have been disposed of, whether by slaughter or otherwise.

SCHEDULED COUNTRIES.

Ports in Scheduled Countries from which brought.	Ports in Great Britain to which brought.	Disease.	Diseased Animals.						Healthy Animals.*					
			Number of Diseased Animals.					Disposal.	Number of Healthy Animals brought in the same Vessels with Diseased Animals.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.		Cattle.	Sheep.	Goats.	Swine.	Total.	
Antwerp . .	Harwich . . .	Foot-and-Mouth	...	4	...	...	4	Slaughtered under the instructions of the Privy Council.	...	840	...	...	840	Slaughtered under the instructions of the Privy Council, except two which were slaughtered on account of injury.
,,	London . . .	,,	43	130	...	...	173	Ditto	349	303	...	...	652	Slaughtered under the instructions of the Privy Council.
,,	,,	Sheep Scab . .	...	6	...	...	6	Ditto	88	18	...	...	106	Ditto
Boulogne . .	,,	Foot-and-Mouth	40	...	...	183	223	Ditto	107	...	...	456	563	Ditto except one pig which died at the place of landing.
Bremen . . .	,,	,,	80	38	...	...	118	Ditto	598	82	...	...	680	Slaughtered under the instructions of the Privy Council.
,,	,,	Sheep Scab . .	...	64†	...	...	64†	Ditto	...	...	...	...	...	
Bremerhafen .	Hull	Foot-and-Mouth	1	3	...	...	4	Ditto	31	98	...	...	129	Ditto
,,	,,	Sheep Scab . .	...	7	...	...	7	Ditto	42	128	...	...	170	Ditto
Cherbourg . .	Southampton .	Foot-and-Mouth	...	...	...	31	31	Ditto	...	...	...	301	301	Ditto
Hamburg . .	Hartlepool . .	,,	3	10	...	...	13	Ditto	52	823	...	...	875	Ditto
,,	Hull	,,	120	7	...	...	127	Ditto	799	381	...	...	1180	Ditto
,,	London . . .	,,	417	...	...	179	596	Ditto	1370	...	...	62	1432	Ditto
,,	Middlesborough	,,	2	...	...	...	2	Ditto	32	280	...	...	312	Ditto
,,	Sunderland . .	,,	...	1	...	...	1	Ditto	...	585	...	...	585	Ditto

Havre . . .	London . . .	„	202	...	...	...	202	Ditto	291	...	...	...	291	Ditto except one which was slaughtered on account of injury.
Honfleur . .	Southampton .	„	...	...	...	24	24	Ditto	...	...	...	...	...	
Ostend . . .	London . . .	„	10	...	...	...	10	Ditto	53	...	...	13	66	Slaughtered under the instructions of the Privy Council.
St. Nazaire . .	„	„	52	...	...	...	52	Ditto	132	...	...	...	132	Ditto
Total Diseased Animals .		Foot-and-Mouth	970	193	...	417	1580	Total Healthy Animals .	3944	3538	...	832	8314	
„ „ „		Sheep Scab . .	...	77	...	...	77							
Total			970	270	...	417	1657							

UNSCHEDULED COUNTRIES.

Harlingen . .	Hull	Foot-and-Mouth	1	...	...	...	1	Slaughtered under the instructions of the Privy Council.	243	...	...	...	243	Slaughtered under the instructions of the Privy Council.
Niewdieppe .	„	„	1	...	...	...	1	Ditto	10	...	...	2	12	Ditto
Rotterdam . .	Harwich . . .	„	...	2	...	...	2	Ditto	...	701	...	...	701	Ditto
„	Hull	„	9	...	...	...	9	Ditto	482	113	...	...	595	Ditto
„	London . . .	„	...	...	...	115	115	Ditto, except two which died at the place of landing.	...	...	...	364	364	Ditto
Total Diseased Animals .		Foot-and-Mouth	11	2	...	115	128	Total Healthy Animals .	735	814	...	366	1915	

* "Healthy Animals" means Animals which were not found to be diseased on inspection on landing.

† These sheep were brought in the same vessel with other animals affected with foot-and-mouth disease.

"Veterinary Department, Privy Council Office, July 12th, 1875."

"ALEXANDER WILLIAMS, *Secretary*.

CATTLE PLAGUE.

HUNGARY still remains free from this disease, but it continues to prevail at Litovanie in Croatia, and has broken out at Bodsvakar in the military frontier. It has also appeared in many localities in the Government of Lublin, and, according to the latest intelligence received from Russia, the disease was spreading in several of the Baltic provinces. Measures to arrest its progress were in active operation, but up to the time of our last report little impression had been made on the spread of the infection.

FOOT-AND-MOUTH DISEASE.

THIS disease prevails to a great extent on the Continent of Europe. Outbreaks have been reported in Spain, which until now has been singularly free from foot-and-mouth disease. The disease has also appeared in Italy, in the neighbourhood of Brindisi, but does not appear to have spread to any great extent in the neighbourhood.

GLANDERS.

THIS disease appears to be very prevalent in Germany, especially among the cavalary horses. At a late inspection of troops which took place at Dantzic by the Commander-in-Chief of the First Army Corps one regiment was unable to appear in consequence of the losses sustained from this disease.

Facts and Observations.

ADULTERATED MILK.—C. W. Rowe, milkman, at 56, Great Coram Street, was summoned for selling milk adulterated with 16 per cent. of water. Mr. Ricketts did not dispute the facts, but asked for the dismissal on the ground that the provisions of the Act had not been complied with, viz., informing the vendor of the time and place of the analysis. Mr. Bristow considered the objection fatal, and dismissed the summons.

SUFFOCATION FROM SANITARY NEGLECT.—Early in June three men employed in the stable yard of Mr. Cave, veterinary surgeon, Broad Street, Nottingham, were suffocated under very painful circumstances. The head stable-man, named John Hammond, went into the manure hole to remove some manure, and was suffocated by the foul air. A man named John Crofts, intending to rescue Hammond, shared the same fate, and another man from an adjoining yard, named John Burke, also descended the hole, not knowing what was the matter, when he was also suffocated.—*Daily paper.*

THE VETERINARIAN, AUGUST 2, 1875.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

AWARDS TO STUDENTS UNDER THE CHARTER OF INCORPORATION OF THE ROYAL VETERINARY COLLEGE.

THE profession will learn with much satisfaction that the Governors of the Royal Veterinary College have resolved to lose no time in turning to advantage the powers conferred upon them by the Charter of Incorporation.

At a meeting held since our last issue they determined to establish a Scholarship of £25 per annum, tenable for two years; so that, commencing with one Scholarship at the coming winter session, two Scholarships will be given in the next and each succeeding year.

The selection will be made from a list of candidates to be returned to the Governors by the College of Preceptors, and containing such a number as may be fixed on, from time to time, as having passed the best Matriculation Examination, including *Classics, or the Modern Languages, and the higher branches of Arithmetic and Physics.*

No award of a Scholarship is, however, to be made until the Governors have received the report of the Professors on the respective merits of each student who had passed the required matriculation examination; such report being based on the professional knowledge of the candidate as shown by his examination in the several subjects which are included in the *first winter and summer courses of instruction*, and to have reference to his *general good conduct* during the period of his studies.

The Scholarship will in each case date from the time the student entered on his studies.

In addition to the Scholarships two or more *Annual Exhibitions* will be granted to students whose names are returned to the Governors in a list prepared by the College of Preceptors and the Professors of the Royal Veterinary College.

Besides these a *Gold Collegiate Medal* will be awarded to the student who, at the end of his academical course, shall be selected, upon the report of the Principal and the Professors, as having best deserved the same for general proficiency and good conduct during the entire period of his pupilage.

A *Silver Collegiate Medal* will also be granted annually to the second best student on the same terms; besides which *Class Prize and Certificates of Distinction* will be given on the nomination of the Principal, and of the several Professors in each division of the student's education. They will be distributed to the students in "Class A" on their passing the "First Examination," and to those of "Class B" on their obtaining the Diploma of the Royal College of Veterinary Surgeons.

In addition to these well-devised means of encouraging the students to increased exertion in obtaining professional knowledge, *Certificates of Distinction* are also to be granted to all students who are reported by the Court of Examiners as having passed a *superior* examination for the Diploma of the Royal College of Veterinary Surgeons.

The Governors will also award a *Silver Medal* and a *Certificate of Merit* to Students who pass the best examination on Cattle Pathology; this award, like the others, to have reference to the general good conduct of the successful competitors.

The Coleman Prize is henceforth—in accordance with the original wish of the donor—to be confined to pathological and practical subjects "relating to the foot of the horse and the principles and practice of shoeing; the diseases of the eye, and the disease known as glanders."

In addition to these means to stimulate students to become good practical veterinary surgeons, Candidates who acquit themselves in a superior manner at the Preliminary Examination, conducted by the Professors, will, on obtaining the Diploma of the Royal College of Veterinary Surgeons, be eligible for election as Licentiates of the Royal Veterinary College.

Much, indeed very much, might be said in praise of these

measures. They lie as solid foundation stones on which to rear a superstructure, the nobleness of which will become more and more apparent as time goes on.

We had hoped to be able to announce that a free bestowment of Honors on members of the profession had also taken place; but it has been found necessary to temporarily postpone the election of HONORARY AND FOREIGN ASSOCIATES, FELLOWS, AND LICENTIATES, that the new code of Rules and Regulations should be tested by practical experience, before they take the form of Bye-Laws under the Charter of Incorporation.

THE ROYAL AGRICULTURAL SOCIETY'S SHOW AT TAUNTON.

IN its veterinary aspect the exhibition at Taunton, remarkable in other respects which have been sufficiently discussed in the agricultural and daily press, did not present any specialities. No outbreak of foot-and-mouth disease occurred among the cattle or sheep, and it is worthy of remark that such an occurrence at an agricultural show is very rare, a circumstance which speaks positively in favour of restrictions which are enforced not only by the officers of the Society, but also by the exhibitors. The veterinary inspection which is insisted on before the animals enter the show-yard may exercise some deterrent effect; it would necessarily fail to exclude animals in which the disease existed in the incubative stage. The chief cause of the immunity which has been enjoyed for years, even in those periods when foot-and-mouth disease has been most rife, is the extra care which owners take to preserve their animals from infection while on their premises and during transit, and the caution which they exercise in keeping them away from an exhibition if an outbreak of disease occurs on their farms among the animals which are entered for competition. Many animals were withdrawn on this account at the last show.

In spite of the unfavorable weather, which gave rise to

some apprehension, the general health of the stock was good. Cases of catarrh were numerous, but the attacks were not severe, and only in a few instances was it necesary to subject the animals to treatment. One horse was removed from the show owing to an attack of congestion of lungs; this was the only serious case of disease of the respiratory organs which occurred during the week.

Indigestion accompanied by tympanitis was treated in cattle and sheep with success, and its recurrence prevented by withholding the wet grasses which had caused it. In one or two instances where animals were suffering from constipation in the commencement, diarrhœa suddenly supervened, the result, as was afterwards ascertained, of doses of powerful purgatives which the attendant had administered before seeking veterinary advice. One of the great difficulties which the practitioner has to contend with in treating farm stock is this officiousness on the part of shepherds or herdsmen, who are always in possession of secret specifics, which they use independently of the measures which the veterinary surgeon may employ. The danger of the practice was illustrated in a very pointed way in the show-yard at Taunton. Several rams suffered from strangury; the urine was discharged with difficulty and was mixed with blood, alkalies combined with opiates and laxatives were given without effect, the straining continued and even increased. The shepherd expressed his astonishment that the animal had not been relieved, as he had given several good doses of balsam of copaiba and oil of juniper—a mixture which would account for the existence of strangury without the action of any other causes; and yet we have heard intelligent stock-owners profess that they would rather trust sick sheep to the hands of a good shepherd than to the most scientific veterinary surgeon. We can only say, So much the worse for the sheep.

Disqualifications among the pigs exhibited were more numerous than usual, and, as a matter of course, the discussion which takes place every year as to the reliable character of the dentition test has been reopened. We are not

prepared to deny that premature development of the teeth of the pig sometimes happens; and it may, therefore, occur now and then that an animal may be unjustly disqualified; but long experience has convinced us that the dentition of the pig is remarkable for regularity, and of late years the tendency has been in the direction of retarded development of the permanent teeth. The effects of artificial selection in producing rapid growth of structure are apparent; but we have reason to question the truth of the common opinion that high feeding materially influences the advance of the permanent teeth; on the contrary, the use of prepared food lessens the amount of work which the organs of mastication have to do, and therefore is more likely to retard than accelerate their development.

Extracts from British and Foreign Journals.

CARNIVOROUS PLANTS.*

At a recent meeting of the Edinburgh Botanical Society Dr. Balfour read notes of experiments he had been making on *Dionœa muscipula* and allied plants. These experiments painfully confirmed the suspicions entertained by Ellis, Curtis, Hooker, and Darwin that the dionœa is a carnivorous and, it may be added, a most brutal plant. Dr. Balfour classified the facts he had observed in regard to it under the heads of irritability, contraction, secretion, digestion, and absorption. The irritability, it seems, is resident in six delicate hairs, so placed on the surface of the leaf that no insect can avoid touching them in crawling over. Dr. Balfour touched with a needle every other part of the leaf and no response followed; but no sooner was the point applied to one of those hairs than a contraction of the leaf ensued. Chloroform dropped on a hair caused the leaf to close like a winking eye, but water had no such effect. It was only when the object seized was capable of affording nutrition that the contraction continued for any considerable length of time. A piece of wood was soon released, and so was a dried fly; but

* From the *Pall Mall Gazette*.

when a live fly or caterpillar or spider was enclosed the contraction lasted on an average for about three weeks. The leaf at the same time gave out a viscous acid secretion. This appeared to be only the case when an insect was captured, and it was always present on such occasions; but whereas with a fat spider it was abundant, with a shrivelled fly there was very little. The notion that any nourishment was obtained from insects so enclosed has been controverted; but Dr. Balfour pointed significantly to the facts that young plants of dionœa under bell-glasses had been found not to thrive so well as those left free, and that while a piece of beef wrapped in another leaf became putrid, a piece enclosed by the dionœa remained perfectly inodorous, but soon lost its red colour, and was gradually disintegrated more and more till it was reduced to pulp. This statement, showing the greediness and ferocity of the dionœa, created quite a painful sensation among the members of the Botanical Society, and the chairman, while recommending a continuance of the experiments, wisely suggested that they should be completed before the Anti-Vivisection Act comes into operation, since otherwise Dr. Balfour may get into trouble.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD JULY 14TH, 1875.

Colonel Sir F. Fitzwygram, Bart., President, in the Chair.

Present:—Messrs. Dray, Moon, Withers, Field, Gowing, Balls, Broad, Harpley, Greaves, Lawson, Lepper, Cox, Cartwright, the Secretary.

The minutes of the two last special meetings were read and confirmed.

Letters were read from Professor M'Call, Messrs. Mayer, Cartwright, Lepper, and Withers, acknowledging the honour of their election as Vice-Presidents.

Mr. Withers also acknowledged the honour of his re-election as Treasurer.

From Dr. Burdon Sanderson, acknowledging the honour of his election as a member of the Board of Examiners.

From Dr. Taylor, approving the election of Dr. Sanderson.

From Mr. Burley, of Leicester, conveying his thanks to

the Council for the resolution passed at the last meeting relative to his deceased father.

The *Secretary* handed in a copy of a pamphlet on "Drinking Water," presented by the author, Professor Voelcker.

On the motion of Mr. Dray, seconded by Mr. Greaves, the thanks of the Council were voted to Professor Voelcker.

From Mr. Fleming, regretting his absence from the meeting of the Council, presenting a copy of the new *Veterinary Journal*, and requesting to be furnished with abstracts of the proceedings of the Council, for publication in the *Journal*.

Mr. Broad proposed, and *Mr. Gowing* seconded, a vote of thanks to Mr. Fleming for his gift.

This was agreed to.

Mr. Harpley proposed that Mr. Fleming's request be complied with.

This was seconded by *Mr. Gowing*, and agreed to.

The *Registrar* reported that 250 copies of the new *Register* had been received from the printers.

Letters were announced as having been received from the Deputy Clerk of the Peace, St. Albans; from Mr. Hill, of Wolverhampton; Mr. Worsley, of Bolton; and Mr. Simpson, of Maidenhead.

Mr. Broad proposed the re-election of Mr. Coates as Registrar for the ensuing year.

Mr. Balls seconded the motion.

On a ballot being taken Mr. Coates was declared to be unanimously re-elected.

The following committees for the year were then appointed:

Finance Committee.—Messrs. J. C. Broad, Field, Harpley, Moon, Balls, and Withers.

Publication Committee.—Professor Brown, Messrs. Fleming and J. R. Cox.

College Fund Committee.—Professor Brown, Messrs. Balls, J. C. Broad, Field, Gowing, Harpley, Mayer, and Withers.

Parliamentary Committee, with power to add to their number.

Prof. Simonds, Messrs. J. C. Broad, Field, Fleming, Gowing, Harpley, Wilkinson, and Cox.

Library Committee.

Prof. Axe, Messrs. Harpley and Dray.

The Registrar read the obituary notice.

Letters were announced as having been received from the Principal of the Royal Veterinary College, and from the

members of the Board of Examiners, approving the time selected for holding the examinations.

The Secretary read the results of the "First" and "Pass Examinations" recently held in London.

A letter was read from Dr. Dunsmure, stating that the probable number of students who will offer themselves for the minor examination will be—Veterinary College, Edinburgh, 10; New Veterinary College, Edinburgh, 14; Glasgow, 20. The examinations to commence—in Edinburgh, on the 20th inst., and, in Glasgow, on the 22nd.

A letter was also read from Prof. Walley, enclosing another from Mr. Edward Lewis, formerly of Budworth, Cheshire, and now of St. Louis, U.S., stating that in travelling in America he had lost his diploma, and asking how be could obtain a duplicate copy.

The Secretary was directed to write to Prof. Walley, or to Dr. Young, of Edinburgh, for an authentication of Mr. Lewis's handwriting, and, if the answer was satisfactory, to send him a certificate in the form employed on previous occasions.

The Secretary read the report of the College Fund Committee. It stated that since the last meeting of the Council circulars had been issued to the members of the profession throughout the United Kingdom soliciting subscriptions. The sum of £35 had been received and paid into the bank during the past month, leaving a balance of £92 11s. 7d. £10 had just been received from Mr. John Lawson, Manchester, and subscriptions promised, but not yet received, amounted to £53 12s.

Mr. Dray moved the adoption of the report.

Mr. Moon seconded the motion, which was agreed to.

The Secretary read the report of the Finance Committee, including the Treasurer's Balance Sheet. The present liabilities amounted to £131 19s. 3½d., and the balance at the bank was £519 17s. 1d.

Mr. Cox asked if the cost of the examinations exceeded the receipts from the pupils.

Mr. Harpley said that at the April examinations the Scotch schools had not a full number of students, and the result was there was a great loss to the college.

Mr. Dray asked what the liabilities were to the Parliamentary agents.

The Secretary said that was a running account which had not been sent in.

The President thought the accounts should always contain an estimate of such liabilities, which might be easily obtained.

On the motion of *Mr. Gowing*, seconded by *Mr. Cartwright*, the report and the quarterly balance sheet were received and adopted.

The correspondence that had taken place relating to the new charter of the Royal Veterinary College was read, and, on the motion of *Mr. Harpley*, seconded by *Mr. J. C. Broad*, was ordered to be entered on the minutes.

Referring to Messrs. Wilkinson's complaint that imputations had been cast upon them on account of their action in this matter,

The President said he had an interview with Messrs. Wilkinson, and explained to them that at the meeting of the Council nothing was said which could in the least degree bear the construction of imputation against them. Of course the Council were not responsible for anything which members might have said in their private capacity.

The Secretary was directed to write to Messrs. Wilkinson, stating that no imputation of any kind had been cast upon them at the council meeting.

Mr. Dray said the correspondence that had been read entirely justified the observations he made at the annual meeting, when he stated on the authority of the representations from the Parliamentary agents that the clauses about which so much discussion had taken place had been inserted in the Charter.

Mr. Harpley, in pursuance of notice sent to the Secretary on the 3rd June, that at the next Council meeting he would "call the attention of the members to the question as to the Solicitor to the College, and move a resolution," said he was sorry to find that that notice had been interpreted to mean an intention on his part to move for the appointment of a new solicitor. He merely wished to "call attention" to the subject, but one member of the Council, misunderstanding the object of the notice, had issued a circular letter to the other members asking them to give their votes for another gentleman in Mr. Wilkinson's place. Mr. Wilkinson had not resigned, and the Council were not likely to pass a resolution summarily dismissing him from the position he had held for so many years as legal adviser of the Council. Recent occurrences had rendered it incompatible for the same solicitor to hold the two appointments of legal adviser both to the Royal College of Veterinary Surgeons and the Royal Veterinary College. So far back as last November he had proposed that the President and Secretary should wait upon Mr. Wilkinson, and ask him if he thought from his position as joint solicitor

he could advise the Council with regard to the proposed Charter. That motion was seconded by Mr. Fleming and carried, but did not appear to have been acted upon, and in fact no record of it was entered upon the minutes. Had Mr. Wilkinson been spoken to then the subsequent difficulties might have been avoided. He had no complaint whatever to make against Messrs. Wilkinson in their professional capacity; they were most talented men, standing very high in their profession, and when he was President they displayed the utmost care and interest in all matters upon which the Council hadto consult them; but he considered the time was come when some such resolution as that which he now proposed should be agreed to: "That recent events having proved to this Council that it is inexpedient to employ the same legal adviser as the Royal Veterinary College, the President be requested to call on Messrs. Wilkinson and Son and point out to them the difficulty the Council found themselves in, when the Charter recently granted to the Royal Veterinary College was under consideration, by reason of their being unable to obtain their solicitor's opinion on the Charter, and to suggest to Messrs. Wilkinson the advisability of their resigning either their connection with the RoyalCollege of Veterinary Surgeons or with the Royal Veternary College."

Mr. Withers said he had no hesitation in avowing himself as the author of the circular which Mr. Harpley had alluded to, and he thought there was no impropriety in what he had done.

Mr. Field seconded Mr. Harpley's resolution, which was agreed to.

The Secretary suggested that a new by-law should be framed, fixing the minimum number of students which might be examined at one time. On the 17th April, he said, there was at one examination only four students for the Pass Examination at the Glasgow Veterinary College, and four for the "First Examination." The consequence was that the expenses exceeded the receipts in Scotland by £68. For the ensuing examinations there will be twenty students from Glasgow, thus making an overplus of two, and in Edinburgh there would also be too small a number. It had formerly been arranged that in such cases the odd number should be transferred from one place to the other. In one or two cases that agreement had been acted upon, and the council had paid the travelling expenses of the students from Glasgow to Edinburgh, or *vice versâ*. The Royal Veterinary College had arranged their students so as to form a full number, or very nearly so, on every occasion.

Mr. Greaves asked what number of students would recoup the expense of calling a Board.

The Secretary said not less than six would be required.

The President said there were several courses which might be pursued, and he therefore moved "That a Committee should be appointed to report on the excessive cost of the Scotch Examinations and to suggest the best means of remedying the evil."

Mr. Field seconded the motion, which was agreed to.

On the motion of Mr. Dray, seconded by Mr. Gowing, the following gentlemen were appointed to form the committee: Messrs. Harpley, J. C. Broad, and Cox.

The President proposed, "That a committee be appointed to consult with the principals of the schools, and report on the advisability, or otherwise, of adopting two instead of three examinations in the year, and also to fix the best time for holding the examinations." The first object of the motion, he said, was to prevent the course of instruction in the schools from being interrupted by the necessity of working up a certain number of students to pass their examinations, whilst the others were continuing their ordinary lessons. His second object was as far as possible to compel all the students to join at one time of the year. If a student joined a school at an intermediate period he must necessarily lose the thread of the instruction which had been given to those who had attended the whole session. In the spring of the present year he was at Edinburgh, and was rather amused to find that the Scotch Schools wished to have only two examinations, because about four years ago, when Prof. Simonds wished to have only two examinations, Prof. Williams had pressed so strongly for three that the point was conceded at his request. When he returned to London, however, he found that Prof. Simonds had also changed his mind, and now thought it best to have three. If the proposal to have only two examinations were strongly opposed by the London School, it would be unfair to carry it, as that was the largest school, more especially as no representative of the Royal Veterinary College was present at the council meeting. He proposed his motion rather in the interest of the schools than of the College, for the three examinations put too great a burden upon the teachers.

Mr. Harpley seconded the motion, which was agreed to.

The *President* next proposed the motion of which he had given notice, for awarding certificates of merit to the most distinguished students at the Pass Examinations. He thought

it would afford a stimulus to study, and he had ascertained from Mr. Loch, the Parliamentary agent, that there was nothing in the Charter to prevent the granting of such certificates. One objection which had been advanced to the proposal was, that it was invidious to make any distinction between one student and another, but he thought an undue regard to the interests of the idlers would not tend to the advancement of the profession. It had been said that the inferior schools might suffer by the certificates of merit, but he thought that would be rather a benefit than an evil. The establishment of such certificates would greatly lighten the labours of the teachers by supplying to the students an additional and most powerful motive to exertion.

Mr. J. C. Broad seconded the motion.

Mr. Gowing thought the Council should know the form of the certificates which it was proposed to grant before they voted upon this question.

The President said it would be desirable to state at the foot of the certificates that they had only been granted since 1875. This was necessary in the interests of those who had already obtained their diplomas.

Mr. Cox said he had some misgiving as to the wisdom or the policy of granting special certificates of merit. Would it not be preferable to regard the diploma itself as the certificate of merit, and to consider that those who could not secure such a certificate were not deserving of the diploma at all?

Mr. Gowing thought such certificates would work badly and create unpleasantness among members of the college residing in the same town or district.

Mr. Greaves thought it was right to give encouragement to students to make themselves thorough masters of their profession. It was an injustice to the clever and talented student to leave him on a level with one who had but just managed to obtain his diploma.

Mr. Dray approved of the motion.

The President said that, in order to secure the approbation of the Council, he was prepared to alter his motion as follows:—"That the examiners for the final examination be directed to report to the council the names of students who have passed with very great credit, and also the names of students who had passed with great credit; that the lists so furnished by the examiners be entered on the minutes of the council, and that copies of the list be furnished to students on application, and sent for publication to the professional journals."

Mr. Gowing much preferred the motion in its altered form.

Mr. Dray seconded the motion as now proposed.

The motion was agreed to.

On the motion of the *President*, seconded by Mr. Dray, the following alteration in by-law 31 was ordered to be suspended till the next meeting. Instead of the present words to read thus, "That no student be eligible for the second or final examination until he has attended one full winter and one summer session after passing his first examination."

An application from Mr. Kennet, who had failed three times to pass the "first examination," to be allowed to attend a fourth time, was considered, but refused.

Mr. Cox (who was not present when the Publication Committee were appointed,) asked that the committee might have some sort of direction as to their mode of procedure in the future. During the past year they had been made the scapegoats for some omissions in the publication of the reports, and he wished to know if the council would approve of the shorthand writer's notes being published *in extenso*.

On the motion of the *President*, seconded by Mr. Greaves, it was agreed, "That the shorthand writer's notes be placed at the disposal of the two professional journals."

Mr. Greaves said he had been asked by Mr. John Lawson, who had been compelled to leave the meeting, to express his thanks to the Council for electing him a Vice-President.

The proceedings then terminated.

THE MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE INAUGURAL ADDRESS

Delivered before the Midland Counties Veterinary Medical Association, held at Stafford, June 1st, 1875 ; by the President,

THOMAS GREAVES, V.S.

GENTLEMEN,—In rising to address you I wish in the first place to thank you for the honour you have done me in electing me your President for the present year, and to state that I am fully sensible of the difficulty, delicacy, and the importance of the situation. I divide my address into eight heads, as shown in the circular ; the first is—

The Late and Present Progress of Veterinary Medicine and Surgery.

If I say we have not made any marked or startling discoveries in our treatment of disease of late years, I shall be stating what is strictly correct, but it must be evident to every man who

watches the course of events that we are making great and rapid progress in our profession. For several years on all sides we have beheld activity, and at the present time observe a greater amount of life and interest awakened than was ever known to exist before; we have great and estimable men producing works of greater research and greater value than any we possessed —works that are not only an honour to the writers but also to the profession; we have also a new Charter of Incorporation granted to the Royal Veterinary College, authorising them to grant Certificates to Fellows, Licentiates, Honorary and Foreign Associates; we have an additional session at each college; we have an additional number of teachers, and an increased number of subjects taught at each college; the studies are divided into sections, and the examinations are performed at twice instead of at one final one; the Examiners are elected for five years now instead of for life as formerly. Each of the colleges has instituted a preliminary examination before the pupil is allowed to enter the college, in order to ascertain his scholastic attainments; the Council of the Royal College of Veterinary Surgeons have instituted an additional test in the examination for the diploma, viz., the practical examination. We are also about securing larger and more suitable premises. These of themselves are great steps in the march of progress, but besides these signs of new life we see in every part of England and Scotland the formation of Veterinary Medical Associations, giving an impetus which never existed before. We have also in full working order the Mutual Veterinary Defence Society, with a fund at this date of over £244 in its bank; also the National Veterinary Benevolent Society, with a fund of over £820 in its bank. These are institutions of great importance. They are supported by nearly every man of eminence in our profession. I could name three professors on the other side of the Tweed, and three who are dead among the number; also a Dick, Fitzwygram, Child, Marshall, Field, Broad, Woodger, Robinson, Cartwright, Lawson, and scores of others; these have felt that the Benevolent Society is twin sister to Mercy.

> "The quality of mercy is not strained;
> It droppeth as the gentle rain from heaven
> Upon the place beneath; it is twice blessed,
> It blesses him that gives and him that takes;
> 'Tis mightiest in the mightiest, it becomes
> The thronéd monarch better than his crown."

In the *Veterinarian* for 1866, page 929, I wrote—"Is there a member of the profession who would not feel an inward satisfaction in having contributed his mite to a fund destined to

relieve the pressing wants of some poor deserving widow with a large family, left on a sudden wholly unprovided for, by the death of some industrious, deserving, but needy brother practioner? What a Godsend it would be to that poor widow to hand her £50 or £100 in her hour of need, or to take one or two of her children, if promising youths, and send them to school, or apprentice them, and afterwards sending them to college, paying the fees out of this fund." Again, at page 16 of same volume, I thus alluded to the provisions made for the widows and orphans of unfortunate members of our profession :—" It cannot be regarded as anything short of a disgrace to a profession which numbers between 2000 and 3000 members that some provision has not been made for families of those who may have been cut off before they were enabled to make any provision for their support. All are not fortunate alike in this world's goods, and what a comfort it would be to many on their death-beds to know that those nearest and dearest to them will be cared for by the members of a profession to which their lives were devoted." The kindly susceptibilities which the claims of this Society awaken within us reach a depth in our natures which no merely intellectual skill or fervour can do. They give quiet satisfaction to the nobler elements of our being. They reflect higher truths for those who will see them. They stir purer thoughts in those who respond to them. They are full of the charities of life, and they quietly bring us into communion with a spirit of love and tenderness eminently calculated to assist us in the discharge of our daily practical duties. Much more might be advanced in favour of this Philanthropic Society, but I hope I have said enough to awaken a deep and wide sympathy, and that the call will be fully responded to. Is it not said—

> "There is that scattereth and yet increaseth,
> And there is that withholdeth more than is meet,
> But it tendeth to poverty?"

As to the Veterinary Medical Associations throughout the land, they have done good work everywhere, but the innate apathy or selfishness of the bulk of the profession is too great for the indefatigable energy and enthusiasm of the few. There are indeed, numbers of men who will never be induced to attend a meeting of professional brethren, whatever intellectual, scientific, or practical subject may be brought forward for their instruction. Such men look upon these meetings as insipid and, useless, not worth the loss of time and expense incurred to attend; they cannot appreciate the value of interchange of intellectual ideas, or the pleasure of professional intercourse; but such men will nearly always be found frequenting horse races,

horse fairs, horse shows, agricultural shows, trotting matches, and other such-like places, and the loss of time and expense is not for a moment grudged. One thing is evident in every department in life—that man's likings and dislikings differ greatly in different men, and their likings have great weight in prompting their actions. There may have been in some instances a lack of earnestness, a lack of interest, and an expense incurred which produced dissatisfaction and abandonment. We should always have some able, earnest, attractive man, whose sunny countenance, whose musical, kind-toned, encouraging voice, inspire a freshness, a joyousness, and cheerfulness in our drooping associations; when with these properties are combined observations of sound, practical wisdom, there must be sympathy, usefulness, and attachment as a necessary result of associating together.

We have also Colonel Sir F. Fitzwygram's magnificent prizes of fifty, thirty, and twenty guineas, annually for the best students. We have also the motion of Mr. George Fleming now before Council, for the Council of the Royal College of Veterinary Surgeons to authorise a higher degree in the profession than membership. Now, I fully approve of every one of these inducements to study and acknowledgments of ability and proficiency. I am well aware that there are numbers of students whom neither Professor Simonds, Williams, nor McCall, nay, nor could the angels in heaven, make clever veterinary surgeons; there are others, again, of bright intellect, well educated, and proficient in practical knowledge, infinitely their superiors, and to whom it is simply an injustice to leave them on the same level. I hold it is our duty to provide distinction as an acknowledgment of this superior capacity. Although I have taken only a cursory view of these matters, they show a recent and present progress in our profession that never existed to the same extent before. We have also the new veterinary journal by George Fleming coming out next July, *which every sincere, earnest friend of the profession must wish Godspeed.*

2. *Veterinary Education, considered in reference to its Classical, Scientific, and Practical Bearing.*

This subject is one of wide and important meaning, and different men have many different views of what is best for our common profession. At every school the professors are crying out for a higher-class education; "Our students cannot be too highly educated," they say; nay, the whole community is crying out for education. I am fully convinced that it will be a happy day for any community when every individual is an educated person. It is true there are numbers of men highly educated

who are useless men, but as a rule education enlarges and refines the mind, and makes the man appreciate his position and duties to the society in which he lives and moves. Even in our own profession we every day see a vast difference in the disposition and intellectual capacity in different men. Whenever I see an earnest worker, one who strives to do all the good he can, it matters little to me whether he is a street-sweeper, a man of science, a man of letters, or a veterinary surgeon, I feel bound to honour him; I feel convinced that he takes the right view of life. Such a one says by his actions—"Life is short; my day of opportunity will soon be past; in a few fleeting months, or at longest in a few fleeting years, I shall be passed to that bourn from whence no traveller returns." He fully believes the fact when he says—

"Life is real, life is earnest,
And the grave is not its goal;
'Dust thou art, to dust returnest,'
Was not spoken of the soul."

All honour to men who are constantly striving to improve and advance this profession, but we must be careful that we do not make a mistake and go a little too far in the question, or rather, in our great anxiety in giving a high-class technical, or scholastic education, we neglect or omit that division of education, namely, the special practical education, which is essential in the production of a useful, clever veterinary surgeon. My view of this subject is this: you may give a youth the highest classical education that can be got at Cambridge or Oxford University, you may teach him to read and write the dead languages, Greek, Hebrew, Latin, &c., teach him the derivation and roots of words, teach him to write and speak fluently five or six of the modern languages, culture his intellect and refine his mind, so much so that he will shine in any society and be an ornament in any body of men, then send him to college for his two winter sessions and the short summer session, teach him anatomy, physiology, materia medica, chemistry, and botany. Practical knowledge, I have been told over and over again, it is not pretended to teach; it would be impossible to teach it in the short space of two sessions. Now, such a young gentleman gets his diploma and goes into practice. Do you expect him to be a useful, efficient veterinary surgeon? Is it not unreasonable to expect it? He has had no opportunities, and has not been accustomed to be amongst horses; his whole time and his whole mind have been occupied in his scholastic studies. Is it not self-evident that his practical horse-knowledge is of a very superficial character? His ideas of disease may be all scientific, but when reduced to practice will often be found producing confusion and disorder.

Is it a matter to be surprised at if such a man, so inexperienced, is found blistering the shoulder when there is matter in the foot, or blistering the shoulders or the spine when the ailment is laminitis? It is true such a man may have a predilection to charge out of all proportion to the services rendered, but is this, let me ask, what you call elevating the status of the profession? Results often show such a man he has diagnosed incorrectly. He lacks the knack or aptitude of going about his patient; he soon becomes nervous and mystifies his case. Such men are often disappointed and discouraged, their business becomes irksome to them, and often they give it up in disgust. I say, in giving him such an education as this, namely, high classical attainments, an education unmixed with practical instruction, you have utterly failed; you have unfitted him for the duties or the calling of a veterinary surgeon. Just in proportion as he gets disappointed and disheartened in his profession will the idea grow upon him that he is too good to be knocked about amongst dirty, greasy horses; his talents and education fit him for a higher sphere, a more cleanly occupation, where there is a better remuneration, and less anxiety and labour.

The veterinary surgeon will always rise or fall, will flourish or fade, in accordance with the ability, diligence, and aptitude, or, in other words, in accordance with the efficiency he possesses. The youth should certainly have a good sound English education, a high class education if you like, but under every circumstance it must be made an essential condition that practical instruction must form a part, and not a little part, of his education during that period of his life as he grows up.

Sir Henry Holland, Bart., M.D., F.R.S., in his 'Recollections of Past Life,' at page 88, says—"I went through the accustomary routine of lectures, demonstrations, clinical practice, and the less profitable teaching of books, learning at a later period (for it requires time for the lesson) that actual experience with a sense of responsibility attached to it is the sole school in which to make a good physician. One of the most learned men I ever knew in the literature of medicine, as well as in physical science, was one of the worst practitioners, borrowing his diagnosis from books, and not from that happier faculty, almost an instinct, which enables to interpret and act upon signs which no book can describe. Various improvements may doubtless be made in the method of medical education, but the subjects in themselves are so subtle and complex, and so blended with the diversities of human character, that no teaching can be really effectual which does not include a certain amount of personal experience and responsibility conjoined with the talent for comprehending and applying its results."

Again, in the same book, he says—"The topic is one which needs not the authority of any prior age, resting, as it ought to do, on the common sense of mankind, and requiring only that this common sense should be rescued from the fetters which fashion and technical forms impose upon it. The prescription of the scientific and classical practitioner, however learned in its Latin and pharmacy, is but a slender part of his professional duty. Of far greater import generally to the patient is his watchfulness over sanitary conditions, such as temperature, ventilation, cleanliness, and quiet. There is great room for improvement, and especially amongst the young in practice, who, coming fresh from the formal institutions of books, lectures, and examination, rest too much upon old names and old opinions, and lack that better learning which experience alone can give."

I know you will pardon me for drawing so largely from Sir Henry Holland's works; he says much that I have wished to say, but he says it so much better than I can say it; does not every day's experience verify the truth of the statements he makes? Now, without feeling a desire to disparage a high-class education, or a desire to exalt practical experience, but to illustrate the fallacy of possessing the first in its purity, and the great importance, nay, the absolute necessity, of blending the two in the education of our future veterinary surgeon, in order to improve and thus raise the status of our common profession. In order to make myself better understood, I will illustrate my meaning by a few examples. It must be within the knowledge of almost every man that there are more men than one, in almost every country, who, possessing natural shrewdness, a little more common sense than their fellows, and a natural talent for the business they are devoting themselves to, become so proficient in that department as to excel almost all others, however superior their education may be; in such a calling, for instance, as bone-setting, the treatment of diseased joints, &c., &c. Although these men may be non-diploma men, or what is commonly called "quacks," and perhaps some of their cures were only pretended cures, and as such are impositions, still we are bound to give these men credit in very many cases which are brought to them after the most eminent, most scientific men in the medical profession had pronounced them utterly hopeless and decided on amputation; these quacks, as they are called, have at once, after a fair examination and mature consideration, adopted some bold operation or method which seemed just the thing wanted. Instant relief and ultimate cure is the result. In such a case the one simplifies the whole matter, his conclusion is arrived at by a sort of instinct; the other views it from a scientific point of

view, takes fifty things into his consideration, often magnifies and mystifies the whole matter, he hesitates, has fears and scruples that do not haunt the other man. I would here respectfully ask, is the scientific, classical man wholly exempt from the imputation of pretended cures, and as such are impositions? We must remember that none but fools are always right. Do not let us throw the mantle of truth over the one simply because he has a diploma, and withdraw the mantle of truth from off the other simply because he is a non-diploma man. Again, as an example of experience *versus* education, is it not an almost every-day occurrence that a father takes his son into partnership, or it may be his late pupil, or it may be a stranger, say twenty-two to twenty-six years old; he himself is fifty to sixty years old; the young man is assumed to be steady, intelligent, and thoughtful; he has had the advantage of a much better and higher education, and all the improvements from the progress made in scientific knowledge, but on sundry occasions he asks the senior partner to see a case he may have been treating several days, and which is not getting on; he has no doubt clear perceptions from his point of view, but he is led away by his imagination. The senior partner simplifies the case, divests it of much that appeared perplexing and mysterious, arrives at his conclusions in a less circuitous fashion; he may say to the junior, "You have done a good deal to this case, hold your hand, let nature do a little now;" he does so, and the patient rallies from that hour. Now, it is very easy to argue in this case and say, "Oh yes, the treatment had evidently cured the disease, and then he would of course have recovered of himself." But I would here remark, it requires much sound judgment and experience to know when you have done enough; the horse is a funky animal, and nature sickens and dies if you molest and interfere with her in the natural performance of her delicate functions. Our scientific remedies, I doubt not, at times tend to frustrate her in her beautiful, delicate, gentle, but perfect mode of working her own cure; men who persist in this mode of practice are always unsuccessful men.

Again, take another case: the junior treats another case, a case of lameness of several days, for hip-lameness; wants to seton, but is somewhat perplexed in the case; he gets senior partner to see it, who before handling it says, "No, it cannot be in the hip." The shoe has been off before and foot examined, but because there was no tenderness in the circumference of the solar surface further search was not made. Now it is found the frog has been wounded, and is separated from heel to toe; all loose horn is removed, patten-shoe applied, and all is well in a few days.

I am not bringing these matters forward for the sake of prejudicing the highly educated man, or the junior partner, or denying that the senior partner is not sometimes at fault, but more especially for the purpose of showing that education of itself, however high it may be, can never make a veterinary surgeon; there must be practical instruction and experience; all is but lip-wisdom which lacks experience.

It is my decided opinion that the modern mode of veterinary teaching and examining is highly artificial, has a tendency to laud too highly the classical attainment at the expense of the practical instruction; its chief bearing and tendency seems to be placing more and more reliance on scientific remedies in subduing disease, and less and less on nature's inherent power to work her own cure.

My experience has over and over again given me proof of the truth that the practitioner who simplifies his views and his treatment of disease is ten times more successful in practice than the man who seems to thrust nature to one side and trusts to his own scientific remedies only.

I will give an example bearing upon this view of treating disease. The first case occurred only a few years ago. A modern veterinary surgeon, who possessed also a diploma of the Royal College of Surgeons, was a strong believer in the omnipotent power of medicine, on which subject we had often held arguments, met me in the street; he asked me to go with him to see a case now nearly recovered; he said it had been a case of acute pneumonia; the pulse was eighty-four to ninety when he was first called in, breathing very quick, mouth hot, ears and legs deathly cold, &c., &c. He went on to say he had sent him eight drinks composed of ten drops each of tincture of aconite, and one drachm each of extract of belladonna; he also sent twelve balls composed of two drachms of carbonate of ammonia and half a drachm of camphor each; one drink and two balls a day. He said that so decided and so marked was the effect of the medicine that he was quite convinced if I had seen him I should have been a convert to the essential and important power of medicine in disease; he said, "I feel morally certain that this horse must have died if he had not had this medicine. You could actually see the action of the medicine; the aconite actually made the pulse to fall ten beats per minute each day for four days; the camphor cleared the head; the carbonate of ammonia acted beautifully upon the secretory glands, so that when you opened his mouth the saliva would flow from underneath his tongue copiously;" in fact, he expatiated most eloquently and in very glowing terms on the action of each medicine. It was refreshing to listen to him; he had explained all these things

to the owner of the horse, who expressed himself delighted to know that we had such direct control over disease by the means of medicine. I found the horse nearly all right; he was in a large clean, airy loose-box, and well nursed. I went into the saddle room, and, looking round, saw a cupboard; I opened the door, and amongst other things there were two brown paper parcels; these had not been untied or opened. I found one of them contained twelve balls, the other a bottle of medicine. I called to my friend, and inquired if he had sent more than the two packets; he had not. I then showed him these balls and medicine; he then involuntarily exclaimed, "Why, these are the two packets of medicine I sent for this horse." I then looked at him straight in the face, and asked, "Am I then to understand that your patient's recovery is to be attributed to the magical effect of this medicine?" Our eyes met, but his tongue was silent; he has not answered my question yet. I could give many instances such as this.

Again, what, let me ask, can be more convincing of the fallacy of reliance upon medicine than in epizootics? the recoveries more frequent as the disease is approaching its close in any given place prove rather the lessened intensity of the virus than the increasing efficacy of the treatment, whatever that may be. In truth, the very diversity of the remedies, propounded with equal pretensions to success, becomes in itself a cogent argument that no true specific has been discovered either wholly preventive or curative of disease.

Few men can conceive or admit the conditions which initiate disease; the conditions or direct causes are utterly imperceptible to any of our senses; even the microscope tells a feeble tale compared with proofs furnished by higher physical research; we can see results, but we fail to understand the actions and changes in the vital economy produced by and dependent on those inconceivably minute atoms, molecules, or organisms. Of the divisibility of matter, whether it be lifeless or living organisms, science has yet much to disclose; but, in the mean time, scientific theories must be counted simply provisional in the present state of the world. In time the knowledge will be given us under the operation of higher laws than we can yet understand, but all the time we are investigating it we are brought into contact with the most profound problems that can come before the mind of man. It is well to believe, and I do believe, that much will be done to give us clearer views of what disease really is, and ennoble medicine in the future, so as to give it a closer relation to the exact sciences; and although in progress to this point something must be abandoned to the pretensions hitherto assumed, and many errors put aside, and the exclusion of the false or unreal will be

an immense gain to all the higher interests and characters of our profession.

We find man, notwithstanding the high attributes he possesses, is to a certain extent an animal in his structure, power, feeling, and desires, and is adapted to a world in which death reigns and generation succeeds generation. The lowest state of intellectual prostration is that of the savage of New South Wales; he is void of curiosity, forethought, and civilisation; he is immersed in sloth, with scarcely any perception of moral distinction. This is deplorable enough, but scarcely less is the other extreme. Minds zealous in the pursuit of truth have frequently ended their inquiries by doubting its existence; in the one case intellectual degradation results from paucity of ideas, in the other from their perplexing multiplicity. Life has become to many far too artificial an occupation, whereby they deprive themselves the power of enjoying in simplicity the good which is abundantly provided for them. The half of mankind are seen to be constantly engaged in seeking out means wherewith they make themselves miserable, or, in other words, they rather augment their misery than otherwise by attempting to substitute artificial knowledge and an excess of refinement for the simple pleasure nature has provided. Human progress is not so much promoted by great talents as by moderate abilities; it is not so much by extending the boundaries of science as by improving the quality of the knowledge we already possess, and diffusing it more generally, that mankind can be benefited. It may be doubted whether nature ever intended all her secrets to be explored or too closely investigated; viewed externally, she displays both power and magnificence; but if we attempt to penetrate too pryingly into her laboratory, it has been truly remarked, we are frequently surprised by the apparent inadequacy of her instruments or the meanness of her agency. How wonderful, for instance, is the human mind! yet, if we examine the chambers of the brain—if we attempt to comprehend the mechanism by which intellectual phenomena are produced—how we are baffled and disappointed! Again, the heart—what a source of emotion!—the tongue, what an organ of eloquence!—the eye, how wonderful its powers! or what more surprising than a seed, expanding into the most beautiful foliage, or an acorn into a magnificent oak! In all these our astonishment is excited by viewing nature in her maturity, not in her infancy—by contemplating her, not in undress, but when she comes forth adorned for action and enjoyment. She is a superb amphitheatre, in which, if man were only satisfied to be a spectator, he might be delighted by the splendour and luxury of her entertainment; but when man ventures beyond the proscenium, or descends into the kitchen to see how the viands

are prepared, he is not unfrequently mortified with the nothingness or the repulsiveness of his discoveries. Thus it is, whether we contemplate man in his lowest degree of intelligence, or trace him up through every grade to the highest and noblest state of excellence, possessing the purest, most exalted, and enlightened sentiments, adding a charm to existence, we find the one the same as the other, tethered to mooring of the finite, and ever gazing upon objects beyond his reach, reminding us of what Pope says, that—

"Man never is, but always to be, blessed."

3. *The Apprenticeship System considered.*

Much was said, and well said, by some of our ablest practitioners, about the time our charter was granted in 1844, showing the advantages of every veterinary aspirant possessing a practical knowledge of the duties of his profession, and for that purpose he should serve an apprenticeship to a veterinary surgeon. There was a rule or bye-law of the Council at the time to the effect that no student was eligible to present himself for examination before the Court of Examiners unless he possessed an indenture of apprenticeship. This bye-law had to be suspended to meet the case of the students at each college at the time, and it has been suspended ever since. It is my opinion, and I fully believe that eight veterinary surgeons out of every ten believe, that the young man who has been instructed, and been constantly engaged in performing the duties about sick and lame horses for two or three years before he goes to college becomes handy and expert in performing those duties; he is familiar with the sights, symptoms, and habits of his patients; everything is plain and easy to him; he performs his duties without noise, or bustle, or trouble. Such an instruction gives him confidence; he feels at home in everything he has to do; during his apprenticeship he is not only taught industrious habits, but he is also to a certain extent taught anatomy, physiology, and chemistry, Then send him to college for the theoretical and scientific teaching; and, I say, provided he possesses a good sound English education and natural talents, he must be infinitely more likely to reflect credit upon the profession and upon himself, and be a far more useful member of society, than the one, however highly educated he may be, if he has had no opportunities of seeing cases, or gaining practical knowledge, only what he may happen to see at college. Does it stand to sense or reason that the man (because he is highly educated) can perform duties that he is quite inexperienced in as efficiently as the man who is accustomed to every phase of those duties? His ideas conform

admirably to theoretical requirements, but which break down in practice.

It is quite true some young men who pay a premium, being gentlemen born, labour under the fallacy that they can gain the knowledge necessary without the trouble or labour of acquiring it; they are above working at and performing the ordinary duties in a veterinary establishment, and on this account some veterinary surgeons object to take paid apprentices, preferring some sharp, intelligent, industrious, promising youth, out of the stable or forge, or from some other occupation, who takes a liking for it, who willingly performs the duties; and it is these plodding, striving youths who, if they ultimately get to College, often make the best men.

4. *The Diploma and the Examiners.*

The diploma is the proof of our having passed the ordeal, and are professional men; it is signed by the most eminent men in the medical and veterinary professions; but if it were possible to elect men ten times more eminent than the men who now attach their names to it—yes, if we could get Albert Edward or Victoria Regina to sign every diploma—it would avail nothing in respect of ensuring success in after-life, unless we have a practical knowledge of the business of our profession. I find everywhere the public is quite indifferent as to who signs your diploma, whether it is signed by a Court of Examiners wholly composed of medical men, or wholly composed of veterinary surgeons. I must say I think the time has come when we should cease electing medical men on our Examining Board, although they are men who are an honour to England. Our Court of Examiners should be composed of veterinary surgeons wholly. We are surely old enough to stand and walk by ourselves. There are numbers of our members who could, with a little study and attention, make themselves qualified to fulfil the duties of any of the tables at the Court of Examiners. I have presided over them, and this is my opinion. We are now between eighty and ninety years old, and it will not be gainsaid that the experienced intelligent veterinary surgeon must know much better than the medical man which kind of knowledge is most required in our profession.

One word in reference to the preliminary examination. At the time the Council urged and gained the consent of each college to adopt it, the Council also urged the desirability of the matters to be left in their hands, in order to avoid invidiousness in the professors and ensure uniformity of the test at each of the colleges. This the Scotch schools were quite willing to do, but the late Professor Spooner would not consent unless the Glasgow School

became a public and not a private institution. We foresaw the danger, and it is now found young men rejected at one school go to and pass at one of the others. We find that the principal of the Glasgow School, owing to a misunderstanding with another principal, has reverted to his old method of examining the youths coming to his own college, that is, examines them, rejects them, passes them, or compromises with them, as he in his judgment thinks best at the time he receives them as students into his college. It is very much to be deplored that the Dick Trust should make the Trust a party matter or question for discussion and display of oratorical powers in the public meetings of the Council. They have brought the school into disrepute and arrested the progress of veterinary education in Scotland. The management and protection they give the funds is the protection the sparrow-hawk gives its victim.

5. *The New Charter of the Royal Veterinary College.*

The Professors and Governors of the above College have petitioned Government and have obtained a Charter of Incorporation for their teaching school. It was thought by some that certain clauses in this new charter would interfere with the rights and privileges of the Royal College of Veterinary Surgeons by empowering the teachers to confer Certificates of Fellowships, Licentiates, Honorary Foreign Associates, upon students before such students had been examined by the Court of Examiners or got their diplomas. It was considered that many students would take this certificate in lieu of the diploma. Certain alterations were suggested by the Council to obviate this objection; the Governors consented; these alterations we are told the Crown Lawyers struck out, saying they were unnecessary; the charter was granted without such alterations. The majority of the members of Council feel very sore upon this matter; from first to last there appeared a desire for secrecy, a desire to withhold from us information about it; then we find just when everybody has agreed that the alterations should be inserted in the clause, there is some sort of sleight-of-hand work put forth, or carelessness on the part of somebody, and they are finally omitted. On making inquiry of the Solicitor-General our Lawyers say they fully believe the alterations were made and retained. The engrossing clerk could not be met with. The President, Mr. Dray, publicly at the annual meeting assured us the alterations formed part of the charter, which assurance he gave us conscientiously and was quite justified in giving us from the information he then possessed; but Professor Simonds informed us a few hours later that such was not so. Further inquiry is entrusted to our President, Col. Sir F. Fitzwygram.

Mr. Harpley is resolved to have it cleared up, even if the question is asked in the House of Commons. Professor Simonds gives his solemn assurance that such powers will never be used until the student has got his diploma.

I am informed the error has since been rectified, the suggested alterations have been added. I must say I am entirely in favour of granting these distinctions, but I am afraid the other colleges will each of them apply for a charter for their colleges, and possibly will ask that certain privileges or authorities be given them that will infringe the rights and privileges of charter granted to the Royal College of Veterinary Surgeons in 1844.

6. *The munificent offer of Col. Sir. F. Fitzwygram, and its probable influence.*

The above is an offer of £105 annually, in three prizes, to be competed for by the students of each or any college. It is an international prize, and must stir up a healthy rivalry not only amongst the students themselves, but also amongst the teachers, for the credit and honour of the college over which they teach. No words of praise can be employed to adequately convey the grateful feeling of a whole profession to that kind, generous, noble and warm-hearted man.

7. *The motion in the Council of Mr. George Fleming for higher degree in the profession than membership.*

The object of this is a very laudable one, viz., to show the difference between the man who is comparatively ignorant or indolent, and the good, clever, superior student. I look upon this as decidedly a move in the right direction; but in deciding upon this or any one of the other certificates of merit or prizes it should never be forgotten that regard must be had to the usefully clever man, and I would respectfully suggest—"That any measure purporting to amend the present mode of educating the veterinary student, viz., the offering of higher degrees, or fellowships, or prizes to those students who have distinguished themselves, is insufficient and unsatisfactory which does not provide ample security that such student possesses a sound practical knowledge of the duties of his profession, and that no student shall be entitled to contend for such honours unless he has had several years' practical experience." If the Council carry Mr. Fleming's motion *we shall then have to apply to Government to supplement the present Charter.*

8. *An epitome of the whole matter.*

In summing up this already long paper I find it would be a superfluous labour to say much. I have placed these thoughts before you not for the purpose that they shall only just be heard and pass away as the idle word; there is matter that it would be

well for our profession if every man would attentively ponder over, and, if he see it to be the right thing, make it his faith, and labour diligently until the various modes and suggestions shall bear goodly fruit. In reference to this Association, the murky cloud that so frowningly has hung over our horizon from almost the beginning, portending evil, hangs there still; now and then a sunbeam has pierced and awakened hopes of its dispersion, but this has again been followed by darkness and despair. May our worst fears never be realised, but, like a giant refreshed with new wine, so may this Association shake off the lethargy that has come over it, and by unity of purpose and determination accomplish the great end for which it was formed, viz., the increase of veterinary knowledge, for—

"If knowledge is power, and you love power and influence—pursue it.

"If knowledge carries in its train extended usefulness, and you love to be extensively useful in your profession—pursue it.

"If knowledge united with uprightness brings esteem and confidence, and you love to be esteemed and confided in—pursue it.

"If knowledge rightly conducted, and directed to right ends, brings you nearer to the fountain of knowledge, and thus makes you more happy while it enlarges your capacity of conferring happiness on others, and you love to be happy and to confer happiness on others—pursue it."

Knott Mill, Manchester.

Veterinary Jurisprudence.

ACTION FOR FALSE IMPRISONMENT.

NEWMAN *v.* COX.

"SETTING A BROKEN-WINDED HORSE."

IN the Court of Common Pleas at Westminster (before Mr. Justice Archibald and a Special Jury) an action was tried on Friday last, the 25th instant, between Mr. Richard Newman, of this town, riding-master, and Mr. George Cox, of Stamford-street, Blackfriars, London, dealer in horses, to recover £1000 for false imprisonment. It will be remembered by most of our readers that a report appeared in the *Cheltenham Examiner* in October last of a prosecution by the present defendant against the plaintiff. Mr. Newman was arrested on a warrant charging him with obtaining a cheque for £120 from Mr. Cox for a broken-winded horse, which it was alleged had been "drugged, loaded, or set," and was thus fraudulently disposed of. Considerable interest was excited at the time, and the defence by Mr. Frederick Marshall, which was acknowledged to be very clever, ended in a complete acquittal of the accused. In consequence of the alleged false imprisonment, Mr. Newman brought the present action, and the court was crowded, as on the previous occasion, with

the mutual friends of each litigant. London lawyers were retained on each side: Mr. McIntyre, Q.C., with Mr. Bushe Cooper (instructed by Mr. Beal), appeared for the plaintiff; and Mr. H. Matthews, Q.C., with Mr. Douglas Straight and Mr. Meadows White (instructed by Mr. Neville Willicombe), for the defendant.

Mr. Bushe Cooper opened the case. He detailed the circumstances of the deal for the horse, and the hardships inflicted on Mr. Newman by his imprisonment. He stated that his client had lost his reputation, and his business had suffered to the extent of at least £400 a year through the iniquitous proceedings. He referred to the case being published in the Cheltenham papers, and particularly the *Cheltenham Examiner*.

Mr. H. Matthews.—"I do not think you can complain of that report."

Mr. Bushe Cooper.—"Certainly not; but it published the fact of his being charged with a fraud and imprisoned on it." The learned counsel proceeded to say that the deal Mr. Newman made was in every way fair. The horse was sold subject to Mr. Mavor's opinion, and it stood the test of that gentleman's examination. At the police-court, when he had an opportunity of explaining any fraud that had been practised, Mr. Mavor utterly failed to do so; in fact there was not a tittle of evidence against Mr. Newman, and he claimed substantial damages for the wrongs he had suffered.

Mr. Richard Newman was then called. He stated that he had been five years in business as a riding-master in Cheltenham; that he had sold the horse to Mr. Geo. Cox, through the introduction of Mr. Frederick Jacobs, on the 8th of September, 1874. He did not warrant it in any way. He sold it, subject to Mr. Mavor's opinion, at £120. Mr. Mavor passed it sound. He galloped the horse in the park to show it to Mr. Cox before he made the deal. After the cheque had been given to him and he had returned to Cheltenham, Mr. Jacobs came to him from Mr. Cox to tell him the horse had turned out broken-winded, and wanted him to give back the money. He refused; but said he would exchange a mare. He went up to London to effect the exchange, and was arrested. He was put in a cell without any bed, and was subjected to many indignities. At the hearing of his case, Mr. Partridge, the magistrate at Southwark, discharged him, and said there was no evidence against him. He had lost £400 a year at least by the charge made against him, and had suffered much from the incarceration.

Mr. H. Matthews cross-examined the plaintiff at some length, and the following is a summary of the replies elicited:—I consider that I have lost £400 a year. I have been in business five years. I have been in trouble all the time. I may have stated in my bankruptcy proceedings, which I filed just before I sold the horse, that I was only three years in business. If so, I made a mistake. I bought the horse from Mr. Llewellyn for £65. I was told by Mr. Malvern, who was the former owner of the horse, that he was a bad, broken-winded horse; but Llewellyn assured me he was sound. I know Mr. Powell. I did not tell him that I had "done" Geo. Cox and Fred. Jacobs. I know Mr. Baker. I did not tell him I

gave the horse anything to set him. I was not on good terms with him. He summoned me before the Cheltenham magistrates on a charge of obtaining a horse by false pretences from him. I gave up the horse, and paid expenses. Mr. Marshall then acted against me. Mr. Baker had become guarantee for payment of an execution which the County Court bailiff had levied at my house, and I deposited the horse with him as security. I forget what I said to him in order to persuade him to let me have the horse. I don't know to a score how many County Court summonses I have had during the last twelve months—not to a hundred. I have had plenty of them. I had no estate when I filed my petition to divide among my creditors. I have not paid them anything. They passed a resolution to accept 3s. 6d. in the pound. I have my books in court. I may have stated to the trustee of my estate that I had lost them ; but I found them afterwards. A few days after I filed my petition I went up to London with the horse. I did not tell Mr. Jacobs I had got him away from my creditors, but I did say he was the "property of a gentleman who was short of money," and that he was a clever hunter. I knew he was not right in his wind. I took good care not to warrant him sound. I knew O'Neil, a dealer, from Birmingham. I never had any conversation about the horse with him.

Mr. Newman was re-examined by *Mr. Cooper*.

Mr. Frank Haines was next called, but his evidence did not affect the case. The detective who arrested Mr. Newman was called, but did not appear.

The Clerk to the Southwark Magistrates, who was subpœnaed to produce the information on which the warrant was granted, was then called, but failed to answer.

Mr. Cooper said that this detective officer, who held the warrant which must be put in evidence, and the Clerk to the Magistrates, who had to produce the information, must be sent for. He asked the Judge to adjourn the case the meantime.

The Judge intimated his reluctance to adjourn. The attorney for the plaintiff should have had his witnesses in attendance.

Mr. H. Matthews objected to an adjournment. He had a host of witnesses who, he was instructed, would prove beyond doubt that a fraud had been practised on Mr. Cox, who was anxions to have the case tried out.

After some discussion, the absent witnesses were called on their subpœnas, but the service not being proved, the Judge asked Mr. Cooper if he had any other witnesses to call.

Mr. Cooper, after consulting Mr. Beal (Mr. Newman's attorney), said he would elect to be non-suited.

Mr. H. Matthews hoped the Judge would not permit the plaintiff to be non-suited. Nothing less than a verdict for the defendant would satisfy Mr. Cox.

The Judge said that the action was for false imprisonment. If the defendant showed that he had reasonable and probable cause for arresting the plaintiff, he would be entitled to a verdict. It was for him (the Judge) and not the jury to say if there was reasonable and

probable cause, and he should tell the jury that on the plaintiff's own evidence there was sufficient proof of reasonable and probable cause. If it turned upon the question of malice, there was no suggestion of malice.

After some further discussion, which was carried on privately between the learned counsel, a verdict was given for the defendant.

Mr. Cox's witnesses were in attendance, but not called. It was incidentally stated that the cost of the defence would exceed £300.—*Cheltenham Examiner.*

CRUELTY TO ANIMALS.

Mrs. Chantrill, the woman who has rendered herself notorious by keeping a large number of cats and dogs in a state of starvation at Rottingdean, near Brighton, was at the recent Quarter Sessions for Sussex ordered to pay the costs of the appeal, about £150, and to undergo the two months' imprisonment to which she was sentenced in August last.

NEW MEMBERS OF THE PROFESSION.

At a meeting of the Court of Examiners of the Royal College of Veterinary Surgeons, held July 1st, the following students from the Royal Veterinary College, London, received the Diploma of the College, and were admitted members of the profession :

July 1st.

Mr. Charles Gresswell . . .	Louth, Lincolnshire.
— George Garnett . . .	London.
— Charles Mullett Stapley . .	St. Leonards-on-Sea.
— George South, jun. . . .	London.
— William Henry Jones . .	Brompton Barracks, Chatham.
— Thos. Williams Whitney . .	Tiverton, Devon.
— David Morrison Storrar . .	Chester.

STUDENTS WHO HAVE PASSED THEIR FIRST EXAMINATION, ROYAL VETERINARY COLLEGE.

At the several meetings of the Court of Examiners of the Royal College of Veterinary Surgeons, held on July 2nd, 3rd, 5th, 6th, 7th and 8th, the following students from the Royal Veterinary College passed their "First Examination :"

July 2nd.

Mr. Thomas Sidney Barker.	Mr. Wm. Hollingsworth Hall.
— John Henry Miller.	— George Whitworth.

July 3rd.

Mr. Samuel Alexander Reid.
— Tom Goulstone Batt.
— Joshua Arthur Nunn.
— Thomas Jas. Marriott.
Mr. William Coupe.
— Hartley Thomas.
— Wright Graves.
— Herbert Darley.

July 5th.

Mr. Alfred Brooks.
— Francis Waters Phelan.
— John Henry Bryars.
Mr. Albert Wheatley.
— Geo. Amos Banham.
— William Awde.
Mr. Henry Goulé.

July 6th.

Mr. Thomas Sager Faulkner.
— Thomas Robert Prime.
— William Mole.
Mr. Fred. George Reynolds.
— Harry Moore.
— Wm. Francis Peacock.

July 7th.

Mr. Myrus Child Yaxley.
— James Moore.
Mr. Arthur Wilberforce Mason.

July 8th.

Mr. John Thompson Fraser.
— John Fawthrop Fyrth.
— Alexander Braik Daniel.
Mr. Jonas Squire.
— Frederick Cann.
— Jas. Joseph Williams.
John Griffiths Cattrall.

At the meetings of the Scottish section of the Court of Examiners of the Royal College of Veterinary Surgeons held in Edinburgh on July 20th and 21st, the following students of the Edinburgh Veterinary Colleges passed their "First Examination:"

NEW VETERINARY COLLEGE.

July 20th.

Mr. Daniel Webster.
— George Watson.
— James McBryde.
— Henry Irany.
Mr. James Sandeman.
— James Bell.
— Owen Coll.
— Walter Johnstone.

July 21st.

EDINBURGH VETERINARY COLLEGE.

Mr. William Lowe.
— John Edward Grey.
— John McFadycan.
Mr. John McMunich.
— George Watson.
— Robert Rain.
Mr. William Hunter.

At the meetings of the Court of Examiners of the Royal College of Veterinary Surgeons held in Glasgow on July 22nd, the following students passed their "First Examination:"

GLASGOW VETERINARY COLLEGE.

July 22nd.

Mr. Alexander Chivas.	Mr. Duncan McFarlane.
— William H. Mills.	— John Buntain.
— William Hendri.	— George C. Hill.
— Mac Neil Marquis.	— James Crozier.
— James Wilson.	— John C. Atkinson.
— John Hadden.	— William Shaw.

ROYAL COLLEGE OF VETERINARY SURGEONS —COLLEGE FUND.

The following contributions have been recently received towards the College Fund.

	£	s.	d.
Beart, Walter Jas., Esq., King's Lynn, Norfolk	2	2	0
Blackett, Oswald S., Esq., London	2	2	0
Blakeway, F., Esq., Stourbridge	1	1	0
Broderick, John, Esq., Field Cottage, Finchley	10	10	0
Cupiss, Francis, Esq., Diss, Norfolk	1	1	0
Elam, William C., Esq., Liverpool	2	2	0
Gorton, Charles, Esq., Whitechapel, London	2	2	0
Gregory, Thomas, Esq., Tunbridge, Kent	5	5	0
Hopkin, Tedbar, Esq., Manchester	2	2	0
James, John C., Esq., Thornbury, Gloucester	1	1	0
Lawson, John, Esq., Manchester	10	0	0
Moir, Charles, Esq., Cardiff	2	2	0
Pyatt, Henry, Esq., Nottingham	2	2	0
Rogers, William, Esq., Whitechapel Road	1	1	0
Samson, Frederick I., Esq., Lower Mitcham, Surrey	1	1	0
Slocock, Oliver T., Esq., Carlow, Ireland	1	1	0

Subscriptions may be sent to the Secretary, Mr. W. H. Coates, either by Post-office Orders, made payable at the District Post-office, High Holborn, or by Cheques crossed "Sir Samuel Scott, Bart., and Company, London." An official receipt will be forwarded in return.

THE CHAIR OF CHEMISTRY AT THE EDINBURGH COLLEGE.

AT a meeting of the Dick Trust, held in the City Chambers, Edinburgh, July 12th, Mr. Andrew P. Aitken, M.A., D.S.C., Demonstrator of Chemistry in the University of Edinburgh, was

unanimously elected to fill the Chair of Chemistry in the Edinburgh Veterinary College, which had become vacant by the elevation of Professor Dewar to the Jacksonian Chair in the University of Cambridge.

PARLIAMENTARY INTELLIGENCE.

HOUSE OF COMMONS; *Thursday, July 1st.*

CONTAGIOUS DISEASES (ANIMALS) ACT.

Lord Sandon, in answer to Mr. W. Egerton, said he had no objection to publish the returns from each county of all contagious diseases, except foot-and-mouth disease, mentioned in the above Act.

THE TITLE OF VETERINARY SURGEON.

Letter from "OBSERVER."

To the Editors of the 'Veterinarian.'

I HAVE read with much pleasure the remarks of "Mackcam" in the present number of your Journal, in reference to the title assumed by members of the R. C. V. S. His case may be strengthened by the fact that a young member of the profession has the following words painted upon his house:

I.....
Veterinary Surgeon,
London and Edinburgh. D. P.

As the name of this gentleman appears in the Register as having obtained his diploma at Edinburgh, I do not see how he can with truth employ the word "London." Doubtless he is ignorant of the subject, and hence the use of the names "London and Edinburgh." But there can be no doubt his motive is that of making the public believe he has a double qualification, and that he was educated at the London College.

It is to be deplored that men will go before the public under false colours.

OBSERVER.

OBITUARY.

WE deeply regret to have to record the death, on July 20th, of Mr. Edward Cooke, the much-respected clerk and dispenser at the Royal Veterinary College. Mr. Cooke had been an officer of the Institution for the long period of twenty-seven years, and was consequently well known to the majority of the members of the profession by whom his unexpected death will be much lamented.

We have also to record the following deaths:—Mr. William Haselden, Veterinary Department, Army; his diploma bears date, April 18th, 1872. Mr. William Cope, of Newark, Notts; his diploma bears date, April 29, 1861. Mr. John Marsdin, of Doncaster; his diploma bears date, May 3, 1860. Mr. George James Richards, of Littleport, Ely; his diploma bears date, April 18th, 1872.

THE

VETERINARIAN.

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Communications and Cases.

TYPHOID FEVER IN PIGS.

By J. Wortley Axe, M.R.C.V.S., F.C.S., Professor of Histology and Morbid Anatomy in the Royal Veterinary College.

(*Continued from p.* 577.)

Experiment II.

By this experiment it was sought to determine whether or not the fluid contained in the *typhoid vesicle* had the power of producing *enteric fever* by inoculation. The virus employed was removed on the 19th of April from one of the pigs used in the preceding experiment. On the 15th of May a healthy pig, about six months old, was inoculated from the charged ivory points already referred to. The operation was performed in the ordinary manner as for vaccination—by simply scratching the skin very superficially and wiping the charged points upon the broken surface. The part selected for the operation was the inside of the thigh. Four points were employed upon three separate scratchings.

May 16th.—The inoculated spots exhibit no efflorescence beyond what would be observed in an ordinary scratch.

17th.—The local signs of irritation are less marked than yesterday. There is no exudation from the scratches; indeed the parts are quite dry.

18th.—The redness has almost entirely disappeared from the seat of inoculation, and there are no signs of constitutional disturbance.

19th.—The scabs from the places of inoculation are falling off, and the surrounding skin has resumed its normal colour. There was slight dulness towards evening, and the skin, which was cool in the morning, became somewhat hot.

20th.—The skin is intensely hot this morning, and a diffused redness covers the belly as well as the throat and the inside of the arms. Food is taken with indifference, but fluids are largely swallowed.

21st.—Dulness is much increased. On the belly six or seven small raised spots of a red colour are visible. The efflorescence is more extensive and intense; behind the ears, it is very marked and also on the inside of the thighs. Thirst is great, and food is almost entirely refused. The fæces are softer than they were yesterday. Several evacuations have been made during the day.

22nd.—On the inside of the arms and thighs, and behind the ears, there are large numbers of red spots. Rigors are very decided, and a great desire for warmth is evinced. The eyes are congested and watery, and there is considerable prostration.

23rd.—The spots first erupted are subsiding, and a dark red point, not unlike an ordinary flea-bite, is seen in the centre. A few fresh ones have appeared on the haunch and the breast. The fæces are more consistent than when last referred to. Thirst is very great, and food is altogether refused. The body is emaciating, and the prostration increased.

24th.—The spots evolved on the 22nd are declining, and the epidermis over them is raised in scales. In the centre of all the spots the "flea-bite point" is to be seen.

25th.—The eruption is rapidly disappearing, leaving behind a yellowish-brown stain. The fæces are firmer in consistence, and the animal appears to be better. Thirst is not so great, and a little food is taken occasionally. Towards evening the skin again became very hot.

26th.—Two or three fresh spots have appeared on the haunch. A watery discharge issues from the eyes and nose, and the face wears a pained expression.

27th.—The bowels exhibit marked irritation, the evacuations are frequent, small in quantity, and of a yellowish-brown colour. The epidermis is desquamating from the seat of the eruption, and several fresh spots have developed on the throat.

28th.—The countenance presents a stupid appearance. The

movements are feeble and unsteady, and the stools are liquid and emit an offensive odour.

29th.—Prostration increased; the rigors are very severe, and the pulse is quick, small, and feeble. Towards evening large irregular patches of redness appeared on the belly and breast, and the diarrhœa became more severe.

30th.—A fresh crop of spots has appeared on the belly and about the ears, diarrhœa is very acute, pressure applied to the belly occasions pain, and the eyes and nose discharge a puriform matter. Prostration is now very great, and the body is still more emaciated.

31st.—Much the same as yesterday, excepting that the skin is less red and the eruption has somewhat subsided.

June 1st.—The belly and breast are studded with petechiæ and blood blotches of various sizes; the gait is rolling and unsteady, and a low continuous grunt is emitted with each expiration.

2nd.—A few fresh spots have appeared on the haunch and on the inside of the arms and thighs. The epidermis of the ears and contiguous parts is broken and stands out from the cutis in thick brown scales. On being removed a red raw surface is exposed. Altogether, however, the animal seems better, and its desire for water is less.

3rd.—The haunch is now more or less covered with vesicles,* some of which are confluent. Large layers of epidermis may be readily removed from the part. The ears are of a purple hue, and their cuticle is freely desquamating. The countenance is less expressive of pain, and the diarrhœa has somewhat abated.

4th.—The fæces are less fluid, and the animal has a decidedly better appearance; the discharge from the eyes and nose has nearly subsided, and excepting the hæmorrhagic patches the redness of the skin has almost disappeared.

5th.—The appetite is better this morning; the vesicles are drying up, and the entire surface of the skin is covered with thick and loose epidermic scales. The stools are, however, more fluid and fetid than they have been since the attack.

6th.—Beyond slight twitchings of the muscles of the fore limbs there is no apparent change in the general condition of the animal.

7th.—The head symptoms are less severe. There is no disposition on the part of the animal, however, to leave the bed, even though pressure is brought to bear. The muscular twitchings are more forcible and frequent, and rigors are

* Twenty-four "ivory points" were charged with the virus.

provoked by the slightest exposure. The axillæ are intensely red.

8th.—Excepting that a few fresh hæmorrhagic spots have been developed in different parts of the skin, the symptoms are much the same as yesterday.

9th.—This morning the evacuations are involuntary, and the stools are watery and very offensive. The abdomen is "tucked up," the back is arched, and the extremities are directed towards each other as if to relax the abdominal muscles. The animal is extremely emaciated and almost reduced to a skeleton.

10th.—The stools are deeply stained with blood; several small coagula as well as some greyish-white masses of typhoid exudation have been discharged during the day. The ears are uniformly purple, and very cold. Outwardly they are covered with a thick layer of desquamating cuticle and dried exudation matter.

11th.—The abdomen is tumid and very tender, otherwise the symptoms are much the same as yesterday.

12th.—More large blood blotches have appeared on the sides. The ears are quite livid, and around the border exhibit a gangrenous condition. The abdominal pain is less shown by the application of pressure; but the general health is bad. The breathing is distinctly accelerated, and the emaciation continues to increase.

13th.—Gangrene of the ears is extending rapidly. The animal presents a pitiable aspect. The breathing is quick, and the bronchial sound harsh. There is likewise an occasional cough.

14th.—A large portion of both ears is circumscribed by a line of intense redness, and the sloughing process has fairly commenced. Food is taken sparingly, but there is no decided change in the general condition.

15th.—From this time to the present (July 31st) very slight progress towards recovery has been made. Although far advanced the sloughing process in regard to the ears is not yet completed. The animal was destroyed on the last-mentioned date.

Experiment III.

In order to place beyond all doubt or suspicion that the disease in the pig last experimented on was the direct effect of the inoculation with the virus and not the result of ordinary contagion I had recourse to a second experiment.

To insure complete isolation from all known sources of infection I availed myself of the services of Messrs. Priestman

and Rayment, two gentlemen well-known in connection with contagious animal diseases. A pig was obtained from a healthy stock and inoculated by Mr. Priestman on the 10th of June. Ivory points charged with virus from the pig referred to in the last experiment were employed and the mode of operating was the same as in the former case. The animal was kept some distance away from the College, which at that time was an infected place, and not until the disease had far advanced was it brought under my care. Knowing the contagious nature of the affection I refrained from visiting it, and to the kindness of Messrs. Priestman and Rayment I am indebted for the following report.

June 14th.—Four of the teats are very red and slightly swollen; towards evening the redness disappeared.

15th.—Surface of body very hot; loss of appetite, tremors, and marked restlessness present.

16th.—The surface heat has subsided, a few red raised spots are seen on the belly and on the inside of the thighs; food is altogether refused; respiration somewhat increased. The animal lies on his side and there is no disposition to move. In the evening the spots had subsided, a little food was partaken of, but the surface of the body again became hot.

17th.—More spots have appeared on the sides of the belly in patchy groups. In the evening they declined somewhat and were less distinctly seen.

18th.—The appetite has improved; tremors are still present, the fæces are hard and covered with a little bloody mucus.

19th.—The surface temperature is slightly exalted.

20th.—No change.

21st.—No appetite, skin dry and scaly.

22nd.—Feeds a little; bowels still constipated.

From the last-mentioned date to the 6th of July, on which day the animal was removed to the College, general symptoms of illness, associated with desquamation of cuticle from the entire surface of the body, were continued.

On the arrival of the animal at the Infirmary I submitted him to a careful examination, and fully satisfied myself that the symptoms were those of *enteric fever*. The ears and haunch were marked by irregular patches of a deep purple hue. The eyes were congested, red, and watery, and the dirt which had accumulated around them indicated that this watery condition had existed for some time. The inside of the thighs and arms and the under part of the belly was covered with loose desquamating epidermis. The ears were covered with thick grey scabs and the general mass of cuticle

was being rapidly removed from the body. The countenance was haggard and the gait feeble and unsteady. The extremities were cold and the bowels constipated. The belly was large and resonant on percussion. Pressure revealed some abdominal tenderness, but whether this arose from the tympanitic state of the belly or from actual intestinal disease I could not then determine.

7th.—All the symptoms observed yesterday are intensified, the abdomen being now distended to an enormous degree. The animal has a dull, confused, and stupid look; and convulsive twitchings of the muscles are present to a greater or less extent over the entire body.

8th.—The bowels are still constipated, and the tympanitis remains almost undiminished; the nervous depression is aggravated. The animal obstinately refuses to move even though pressed to do so, and a peculiar groan is emitted when any attempt is made to disturb him.

9th.—This morning the animal was in a state of collapse and died about noon.

Experiment IV.

This may be called a purely accidental experiment; nevertheless it serves to illustrate the incubative period and to determine the virulently contagious nature of the affection. It also furnishes data as to the progress of the symptoms, and serves with other cases to indicate the order of events as they occur during the fever process. The animal which had been procured for the purpose of being inoculated escaped from its house and gained access to the pig used in Experiment III, on July 1st, twenty-one days after the inoculation of the experimental pig.

He was allowed to remain with the experimental pig until the 6th of July, when both of them were brought to the College.

At this time infection was clearly established, and although the animal exhibited no very marked signs of illness a distinct eruption of raised red spots existed on the breast and on the inside of the arms. The spots were not numerous, but isolated and scattered over a large surface. The eyes were suffused and slightly injected, food was taken freely and there was considerable thirst.

July 7th.—The eruption has extended to the abdomen and the inside of the thighs. In the last-named parts the spots are numerous and grouped together in confluent masses. The bowels are constipated and the fæces coated with thick tena-

cious mucus. Towards evening there were violent paroxysms of shivering, and a great desire for warmth was manifested. On the spots erupted in the morning vesicles were developing and the surface of the skin was moistened with exudation. The face is pinched and presents a painful and confused aspect.

8th.—The eyes are very red and a watery discharge issues from them and also from the nostrils. A pungent heat is felt over the entire surface of the skin. The spots are rapidly subsiding; the desire for water is much increased.

9th.—The spots have almost entirely disappeared, but the skin on the breast and ears is intensely red and hot. The fæces are still hard and coated with mucus. The face has a dull and stupid expression and the movements of the body, although regular, are nevertheless feeble.

10th.—The eruption has entirely subsided, leaving the skin freckled with yellowish-brown spots and the cuticle raised and ragged. The seat of the eruption is spotted over with blackish-red points.

11th.—On the inside of the thighs about half a dozen fresh spots have appeared, but otherwise there is a general remission of all the symptoms, and the animal is disposed to feed.

12th.—The discharge from the eyes is puriform, and the nasal flux is tinged with blood. The favorable change recorded yesterday continues to-day.

13th.—In the morning the patient looked more cheerful and the tone of the system seemed altogether better. Towards evening, however, the skin became hot, and four small irregular patches of bright red efflorescence appeared about the umbilicus and threatened a fresh outbreak of papules.

14th.—Half a dozen spots have now developed on the belly; the restlessness and irritability are very marked. There are no indications of pain on pressure being applied to the abdomen, but all the favorable symptoms of the past two days have passed away.

15th.—The body shows signs of emaciation and the movements are feeble and unsteady. Although the general symptoms are not intensified, prostration is more decided than heretofore. No desire is evinced to move even when an attempt is made to raise the animal.

16th.—The bowels are still constipated and well-marked rigors are present. The spots are fast subsiding, but the tips of the ears and feet present a livid hue.

17th.—Beyond an extension of the discoloration of the

ears there is no change to note; the general condition of the animal is much the same.

18th.—There is a decided disposition to feed and the desire for fluids is much diminished; the irritability and restlessness have almost entirely subsided, and there is a uniform abatement of all the symptoms.

19th.—The favorable change of yesterday is continued to-day.

20th.—The skin is fairly cool and the cuticle is desquamating over its entire surface. Thirst is less intense; the discharge from the eyes and nose has much diminished, and the confused and pained expression of the face has now almost disappeared. A little food has been taken and there is a marked improvement in the general state of the animal.

21st.—The bowels are relaxed and the stools are of a dark brown hue. The skin of the haunch is studded with hæmorrhagic patches, and the belly exhibits a number of petechiæ. The desire for food has much increased and the fever symptoms are on the wane.

22nd.—The stools are more fluid and frequent and the bowels manifest signs of irritation. The general health, however, appears to be much better and the thirst has declined.

23rd.—Blood blotches of various sizes are now to be seen on the neck and about the ears. The bowels are still more relaxed and the emaciation continues, but the appetite improves and the general condition is decidedly favorable.

From this date to August 14th the diarrhœa continued with slight intermissions and the wasting of the body gradually went on. The appetite has been very variable throughout, but no signs of acute suffering have been evinced. From time to time I searched the fæces, but in vain, for typhoid sloughs; still I have no doubt that ulceration of the intestine was present, though probably to only a slight extent.

*Pig Typhoid Thermometrical Table.**

Experiment II.

A.

Date.	Morning. Degrees.	Evening. Degrees.	Date.	Morning. Degrees.	Evening. Degrees.
May 15	103·4	103·6	June 2	104·6	104·8
„ 16	103·6	103·	„ 3	104·2	104·2
„ 17	104·	103·8	„ 4	104·	
„ 18	103·	103·	„ 5	103·8	104·
„ 19	103·8	103·4	„ 6	103·8	103·8
„ 20	104·	107·	„ 7	104·4	
„ 21	105·	106·	„ 8	104·	105·
„ 22	104·8	105·4	„ 9	103·4	103·8
„ 23	103·4	105·2	„ 10	103·	104·
„ 24	104·6	106·	„ 11		
„ 25	106·8	105·8	„ 12		103·4
„ 26	105·	106·	„ 13	104·4	104·6
„ 27	103·6	104·4	„ 14	103·4	103·
„ 28	105·2	106·8	„ 15	104·	105·
„ 29	104·2	106·6	„ 16	103·2	103·
„ 30	105·4	105·4	„ 17	103·6	105·2
„ 31	104·6		„ 18	103·6	
June 1	104·6	105·	„ 19	104·4	

Experiment III.

Date.	Morning. Degrees.	Evening. Degrees.	Date.	Morning. Degrees.	Evening. Degrees.
June 10†		103·	June 19	102·4	
„ 11		103·	„ 20	104·8	
„ 12	102·4	104·2	„ 21	106·	
„ 13	102·6		„ 22	105·	104·8
„ 14	102·4	103·6	„ 23	103·6	104·8
„ 15	104·2	105·8	July 6		102·
„ 16	104·2	103·	„ 7	104·1	105·8
„ 17	104·6	105·4	„ 8	105·8	106·6
„ 18	102·		„ 9	105·	

Experiment IV.

Date.	Morning. Degrees.	Evening. Degrees.	Date.	Morning. Degrees.	Evening. Degrees.
July 6‡		105·	July 19	104·	104·4
„ 7	105·8	105·6	„ 20	104·2	104·6
„ 8	105·8	106·	„ 21	104·	104·2
„ 9	105·	105·8	„ 22	103·6	104·
„ 10	105·2	105·8	„ 23	103·8	
„ 11	105·8	106·	„ 24	103·	103·4
„ 12	104·	104·6	„ 25	103·	103·2
„ 13	104·	105·	„ 26		103·6
„ 14	105·	105·6	„ 27	103·	103·
„ 15	104·6	105·	„ 28		103·4
„ 16	105·	105·4	„ 29	103·	103·
„ 17	104·2	104·6	„ 30	102·8	103·
„ 18	104·	104·2	„ 31	102·6	102·8

* This table dates from the day of inoculation.
† Date of inoculation. ‡ Five days after inoculation.

INTERNAL DISINFECTION.

By the Same.

Recent observations and experiments render it highly probable that a new era in the history of disinfectants is about to be inaugurated. The arrestation or retarding of the ordinary processes of putrefaction and fermentation has long been known as a special property of certain chemical agents which we term disinfectants. In the hands of the sanitary police their application in this direction has been attended with incalculable benefit. When, however, they are considered in relation to the spread of contagious diseases it is then that their highest known utility and value come to be recognised. Whatever may be the precise nature of disease-producing germs, or whatever their physical condition, whether of animal or vegetable origin, it is tolerably clear that they are capable of being destroyed by the action of various chemical compounds. Hitherto the application of disinfectants has been limited to things external to the body. Why this should be, it is difficult to opine. One of the most important elements with which we have to deal in limiting the spread of contagious disorders is the air we breathe, and, judging from the accumulated experience of numerous observers of the highest rank, as well as our own, in regard to aërial disinfection, the question of efficacy is removed entirely beyond the pale of doubt. It is worthy of remark that, however complete the process of disinfection in reference to the atmosphere may seem to be, its incompleteness is too often made manifest by the rapid extension of fatal disorders, and this at a time when the greatest care has been exercised and every precaution taken to diminish the area of infection. Not until recently has there been developed any well-grounded reason for considering that this germ-destroying influence is capable of being exercised within as well as without the body, nor has it been suggested that disease may be arrested in its progress, or modified in its results, by the administration of disinfecting agents. It is not a little surprising, seeing the decided influence of certain compounds in limiting the spread of infection, that the study of disinfectants in regard to actual disease has so long been neglected. That certain chemical agents, such as carbolic acid, chloride of lime, and other substances having kindred properties, may render innocuous the germs of spreading diseases when introduced into the circulation, either directly or through the

ordinary channel, is certainly not an unreasonable deduction. Mr. Priestman, veterinary surgeon, of London, a gentleman well known for his skill in legislating for the subjection of contagious maladies, has for several years adopted this system of internal disinfection in connection with contagious disorders. Long ago he assured me that he had given it an extensive trial, more especially in cases of epizöotic eczema, and with what result is clearly shown by the following letter which appeared in the *Times* of September 18th, 1872:

"FOOT AND MOUTH DISEASE.

"*To the Editor of the 'Times.'*

"Sir,—Observing from the reports in the *Times* the alarming progress of the foot-and-mouth disease, and that little has yet been said about curative treatment, will you allow me to state I have found that proper treatment and attention prevents much suffering and the loss of many lives?

"Although not extensively fatal, the disease renders a large per-centage of horned cattle useless, particularly milch cows and those in full profit. During 1869 the disease broke out here on the 9th of August, and by the 30th of the same month out of above a dozen cows all were convalescent. This favorable result was due to Mr. Priestman, the veterinary surgeon in charge of Baroness Burdett Coutts's herd, whose treatment should I think be widely known. This is his recipe. As soon as the disease make its appearance, administer to the entire herd one drachm of carbolic acid night and morning for four days, being careful not to use the same drenching horn or bottle for the healthy as for the infected, the ailing animals are to be fed upon cold wet bran and pulped wurzel or grass only (according to the season), immediately the existence of the disease is noticed; then, if necessary, a little febrifuge medicine may be administered. As carbolic acid will not mix with water only, it must be prepared by a qualified person.

"Mr. Priestman informs me that the result of this treatment is as follows:—About one third of the animals do not show any symptoms of the disease, another third take it in a mild form, and the remainder in the ordinary way, but soon recover. "J. WILLARD.

"The Farm, Holly Lodge, Highgate, N., Sept. 14th."

On the strength of certain conclusions contained in Dr. Sansom's valuable work on 'The Antiseptic System,' Dr. Brackenbridge, assistant physician to the Royal Infirmary,

Edinburgh, resolved to test practically the system of internal disinfection in relation to contagious fevers. *Sodium sulpho-carbolate* was the agent employed, and the disease selected for the experiment was scarlatina. In nearly sixty cases treated with this agent not one death has occurred. In fifty cases an average duration of 4·4 days had elapsed before treatment was commenced, and it is not a little surprising to find that in three cases only was the disease long protracted, and in these the fever had existed six, ten, and fourteen days respectively before the *Sodium sulpho-carbolate* treatment was resorted to. In forty cases the fever declined in a regular and uninterrupted manner without any signs of complication.

In five cases albuminuria was present, but in three of these it was slight and unaccompanied by hæmaturia or renal casts. In the other five cases some suffered slight and temporary rheumatic pains, others showed inflammatory swellings of the cervical glands, and two manifested slight delirium.

Under this treatment the temperature appears to have gradually subsided from the commencement of the attack, as in only four cases was there any rise above the first recorded increased temperature observed. The medicine in one instance was suspended in consequence of the supply having run short, when the temperature soon rose three degrees. By way of showing that even in adults scarlatina does not always proceed to a favorable issue Dr. Brackenbridge says, "Of twenty-four patients admitted into the scarlet fever wards of the infirmary during August, September, October, and November, the four months immediately preceding the commencement of the treatment by the *Sodium sulpho-carbolate,* no fewer than six died." Whatever may be the explanation of the mortality in the twenty-four cases here referred to, a special significance attaches to the sixty cases which so completely responded to the treatment adopted. Having regard to the effect which Dr. Brackenbridge conceived to have been produced by the *Sodium sulpho-carbolate* in mitigating the ravages of disease, he resolved to administer this agent to every individual who had been exposed to the fever poison; especially were those selected who had not suffered a previous attack and in whom the natural susceptibility to infection was undiminished. In seven families it was given to twenty-two individuals exposed to the poison of scarlatina, in three families to fifteen individuals exposed to the poison of diphtheria, and in three families to eight persons exposed to the poison

of measles. The individuals affected with the two last-named diseases were treated in the ordinary manner, and so far as they were concerned as centres of infection no extra means were taken to circumscribe the malady, nevertheless the disease did not extend beyond its original focus. Whether its confinement to the persons in whom it first originated is simply a coincidence or whether it is due to the immunity afforded to those exposed to the poison by the *Sodium sulpho-carbolate* is a question of the highest interest both to the human and comparative pathologist as well as to the sanitarian and the public. Although the experiments of Dr. Brackenbridge are insufficient in themselves to furnish a definite conclusion as to the effect of disinfectants on the development and progress of contagious diseases, nevertheless considerable support is given to the doctrine which they suggest by the uniform success of the treatment adopted by Mr. Priestman in regard to infectious fevers in the lower animals. Should it at any time be shown that the action of disease germs, whatever may be their nature, is capable of being inhibited or altogether destroyed by the operation of special compounds, such a result would surely be hailed as one of the greatest discoveries of modern times. Now that contagious diseases are so prevalent in the herds and flocks of this country, an opportunity is at once afforded to almost every practitioner to aid in solving this important question. If the facts enunciated by Mr. Priestman and confirmed by Dr. Brackenbridge are to be relied upon, the question of limiting the spread of infectious fevers is resolved into a very simple matter.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 581.)

The Rhamnales—Rhamnal Alliance—as established by Professor Lindley include some natural orders of plants which at first sight would seem to have but little affinity. At the same time the large number of the natural orders—no less than ten—brought together will be seen to be not without those characters by which large groups can be sustained. In relation to this subject the learned professor just referred to has the following pertinent remarks:—

"It has already been stated that the only positive distinction between this alliance and Daphnals consists in the com-

pound ovary of Rhamnals. This may seem a trifling difference and quite artificial. But in reality it is connected with a higher evolution of all the parts, as is indicated by the general presence of a corolla; it even becomes monopetalous, and by its considerable development in many instances, even in Sarcollads, where the corolla is missing, the calyx acquires quite a petaloid condition.

Storaxworts pass directly into ebenads, with which the next alliance commences. In general the smallness of the embryo and the largeness of the albumen in the latter completely divide them from rhamnals; but some ebenads have quite an intermediate structure, and are not very easy to distinguish from storaxworts."*

Without an analysis of the whole of the orders we shall have some difficulty in clearing up these points, but still if we examine the four most useful genera, namely, ulmus, rhamnus, enonymous, and styrax, all of which are at the head of natural orders, we shall be able to make out sufficient coherence for the classification adopted as follows :—

Natural Orders of some Rhamnals.

1. Ulmaceæ — Elmworts. *Flowers apetalous, ovary composed of two carpels, cotyledons thin and leafy. Rhamnads.*
2. Rhamnaceæ. *Flowers polypetalous, calyx valvate.*
3. Celastraceæ. *Spindle-trees. Flowers polypetalous, calyx imbricated.*
4. Styraceæ — Storax-worts. *Flowers monopetalous, cotyledons leafy.*

1. The Elmworts may be well represented by the grand trees to which the generic name of *Ulmus* has been given, which name Mr. Loudon, in his 'Arboretum,' says, "It is supposed to be derived from the Saxon word *elm* or *ulm*, a name which is applied with very slight alterations to this tree in all the dialects of the Celtic tongue. Ulm is still one of the German names for elm, and the city of Ulm is said to derive its name from the great number of elm trees that are growing near it. There are above forty places in England mentioned in the Domesday book which took their names from that of the elm, such as Barn Elms, Nine Elms, &c."

In reference to the latter part of this quotation it may be stated that even in modern times the stately elm is frequently appealed to as a distinguishing mark of a place as "The Elms," "Five Elmens," Somersetshire, "The Three Elms," &c.; while it is very common to find elms of some importance

* 'Vegetable Kingdom,' p. 576.

referred to under the names of places or of individuals—thus, "Barnard's Elm," Barnard's Green, Worcestershire, "Maud's Elm, and Piff's Elm," Gloucestershire.

Whether or not any one of the genus *Ulmus* is a truly wild native of this country will ever be a question. Sir W. Hooker, in his fifth edition of 'The British Flora,' though describing eight species, yet prefaces his descriptions with the following remarks:

"With the English species of this genus I confess myself not to be well acquainted, and Scotland, so far as I can ascertain, possesses but one really native kind, the *broad-leaved elm, Ulmus montana*. Dr. Lindley appears to have made them a particular object of his study, and on him I have relied for the following characters."* He then gives descriptions of seven species or rather forms, namely

1. *Ulmus campestris* (common small-leaved elm).
2. „ *suberosa* (common cork-barked elm).
3. „ *major* (Dutch cork-barked elm).
4. „ *carpinifolia* (hornbeam-leaved elm).
5. „ *glabra* (smooth-leaved elm).
6. „ *stricta* (Cornish elm).
7. „ *montana* (broad-leaved or wych elm).

Of these we shall more particularly dwell upon the first and last-named forms under the head of

1st. *Ulmus campestris*, the common English elm.

2nd. *Ulmus montana*, the Scotch or Wych elm.

Both of these trees attain to considerable dimensions, being amongst the very largest of our forest trees, examples not being few of individuals of both kinds from as much as twenty to over forty feet in circumference at from four to six feet from the ground. There are some very large trees of both sorts in Hyde Park, though we are sorry to note that they constantly get less, and most of our English parks are remarkable for fine elms. Thus Sherborne Park in Dorsetshire, and Oakley Park, in Gloucestershire, has some gigantic elm trees, and we have now before us drawings from the latter county of the *U. campestris*, with boles from twenty-eight to forty feet circumference and of the *U. montana*. The finest we know is in Oakley Park, at Cirencester, the seat of Earl Bathurst, and measures thirty-two feet at five feet from the base.

Perhaps the best general figures of the two forms will be found in 'Selby's History of British Forest Trees.' Here the towering and, as it were, two-staged tree of the English

* P. 297.

elm is well contrasted with the less stately growth of the Scotch form, of which latter this author says :—

"Instead of the upright pyramidal growth and long continuous trunk of the *U. campestris*, the wych elm forms a large spreading tree, generally losing its central column at no very great height from the ground, in the great diverging limbs which go to form its magnificent head. The branches, from the weight of foliage and rampant growth, usually take a drooping direction, and in fine old trees are almost pendulous, and hang in rich festoons."*

The leaves of the latter are larger than those of the former, partaking much of the form of those of the hazel-nut, and hence the name of Wytch Hazel, as frequently applied to it, from which we think its name is derived from the fact of the twigs of both hazel and wytch (query witch) hazel having been employed in the fabrication of "divining rods."

The elm can only be looked upon as one of the chief beautifiers of our country, and though its uses in medicine are of little moment, its wood is profitable to grow as being employed for such a wide range of work, and therefore always in demand.

As a tree whose shade will be ever gratefully sought none can surpass that of the elm. Barnes, in his 'Poems in the Dorset Dialect,' has the following verses upon this point, which we copy, not only for their simple quaintness, but for the country way of spelling the name of the tree.

"An' while I zot in sweet deläy,
Below an *elem* on a hill,
Where boughs a-halfwäy up did swäy
In sheädes o'lim's above em still,
An' blue sky show'd between
The flutt'ren leäves o'green;
I woulden gi'e that gloom an' sheäde
Vor any room that weälth ha' meäde."

Rustic poets have long since made use of the elm as a rhyming directory and particularly in matters connected with agriculture and gardening; thus the estimation of the elm is noted in regard to barley sowing in Gloucestershire as follows—

"When the elmen leaf is as big as a mouse's ear,
Then to sow barley never fear."

We fear not now upon this point, as in the past spring we sowed barley before the appearance of the "elmen leaf."

* 'History of British Forest Trees,' p. 125-6.

But this important farm work is limited within a short range, as will be shown as under :

"When the elmen leaf is as big as an ox's eye,
Then says I, hie, boys, hie !"

It is then a pressing matter and the work is pushed on as rapidly as possible.

So long before we had our Gardener's Chronicle or a calendar of gardening operations we had the following directions, showing how important it was to warily note the behaviour of the elm tree, for as say the old rhymes—

"When the elmen leaf is as big as a farding,
'Tis time to sow kidney beans in the garding ;
When the elmen leaf is as big as a penny,
You must sow kidney-beans if you aim to have any."

These directions, rude as they may seem, are after all not without their value, as if you have cultural directions issuing from London it will not be equally valuable all over the island, but inasmuch as there will be a difference in the behaviour of the elm tree of from one to three weeks according to district it will be seen how exactly these rhymes meet the case.

CASE OF RABIES IN A MARE.

By George Kettlewell, Veterinary Surgeon, Stud Department, Kurnaul, Punjab.

Home Stud Register.—Case 871.—Chestnut mare by "Tadworth," T.B.E., with chestnut filly at foot, by "Warlock," H.B.E., a fortnight old.

On visiting the brood mare stables on the morning of the 21st April last, my notice was called to the above-named mare, she having refused her morning feed.

The mare was standing quietly in her stall. Her expression and general appearance, ears erect, as in the act of listening, and a peculiar vacant stare in her eyes first attracted my attention. I stood quietly by and watched her for some little time. After a short period her foal attempted to suck ; this caused her to snap, but not at anything in particular. Each time the foal repeated the attempt she did the same, and raised her hind leg now and then as if preparing to kick at the foal.

Knowing the mare pretty well, as she had been under my special charge before foaling, I quietly approached her head,

but she snapped at me—quite an unusual thing for her to do; —and as the native groom or stable-man approached her with bridle in hand she did the same.

Immediately on observing this I removed the mares with foals at foot from the stalls on each side of her; and managed by the aid of two assistants with a rope, which I passed round her chest, to draw her up to the rails of the stall, to secure her by fastening the rope to them.

I next passed the bridle reins on to her neck, and a good stout rope also, and by the aid of a stick and a few gentle taps over the nasal bones, just to take her attention off, slipped the bridle over her head, passing the rope under the bridle and through the cheek of the bit, and thus led her to the hospital with a man on each side of her head. As she was being led off she appeared much excited; and on arrival at the hospital attempted to throw herself down violently; but we managed to keep her on her legs. She was placed in a loose box with walls all round, as I feared to trust her in one with wood-work partitions. As I was not quite decided at this early stage of her illness as to the exact nature of the malady, I had hobbles put on her, and cast her in the loose box, and administered a full dose of solution of aloes. On releasing her from the hobbles she appeared somewhat subdued.

Before removing the ropes from her head I placed my hand on her nose; when quick as lightning she made a most determined snap at me. Leaving her foal with her, she was let loose in the box, and making all secure I continued to watch her from the outside.

Symptoms.—Nervous twitchings shortly came on, particularly in the muscles about the neck and fore arm; ears erect, with frequent moving of them backwards and forwards; wild stare about the eyes; starting on hearing the least noise, such as suddenly striking the hands together, which caused her both to start and look round; she neighed several times, the neigh being a broken, weak sound, as if the voice was lost.

I omitted to state that before leaving her stall in "the brood mare stable" I caused some water to be poured into a bucket in front of her, but she did not appear to mind it, and actually put her nose quite into the water. I observed, however, that she appeared to have lost the power of swallowing to a certain extent. Whenever the foal attempted to suck she resisted; and she now occasionally turned round and snapped at the foal, but did not actually bite it.

In course of an hour or so she became worse. Profuse salivation and sweating set in, and becoming violent, the foal had to be removed through a small side door. She neighed in a kind of modified, broken voice, and appeared more excited when the foal was taken away. In a short time, however, she seemed to forget all about the foal and became very restless, making frequent attempts to micturate, standing with her hind legs apart: the sexual organs also appeared to be much excited. Shortly afterwards she became more violent still. The muscular twitchings increased; saliva flowed freely, and she seemed quite unable to swallow.

She now commenced to bite and worry her fore legs, and there followed a period of convulsive attacks, increasing in frequency and intensity as evening approached. Ultimately she fell down and remained, unable to get up; the hind extremities losing all power, as in acute paralysis. She died in the course of the evening in a paroxysm of violent convulsions.

Post-mortem appearances twelve hours after death:—

On removing the right fore extremity and ribs, and exposing the whole of the contents of the chest and abdominal cavity, the lungs were found to be congested and studded with light pinkish-coloured patches here and there on their surface. The heart was much congested, and all the vital organs of the body more or less so.

On removing the lower jaw and exposing the inside of the larynx, pharynx, and trachea, the most striking morbid appearances were presented to view.

The entire lining membrane of the pharynx was of a dark red colour, with two raised and extravasated patches of a deep purple hue on its lining membrane, quite rough to all appearance. The lining membrane of the larynx was of a lighter shade, but still intensely red and inflamed. The lining membrane of the trachea presented the same appearance at its upper part, with a light pink hue farther down the tube. It was filled with tenacious frothy-mucus, tinged with blood.

The blood in the vessels remained fluid. It resembled treacle in consistence, and adhered to the scalpel; imperfect clots were found on the left side of the heart.

The stomach had very slight marks of disease.

On removing the skull cap and exposing the brain, more or less congestion and engorgement of its membranes and vessels was found; but the brain substance appeared to be but little affected.

The membranes of the cerebellum, particularly at the back

part, were very much congested, and the choroid plexuses were gorged with blood, with minute clots of extravasated blood interwoven with their structures.

On removing the cerebellum considerable effusion of bloody serum was found to have taken place in and around the medulla oblongata, the nervous structures of the latter being greatly engorged; there was also a small clot of extravasated blood in the fourth ventricle.

There were no marks of recent bites, or a scar even, on the mare which I could detect, but I have little doubt she must have been bitten by a rabid animal some time before; the foal-bearing period and accession of œstrum being a favorable time for the outbreak of the disease.

The mare had been transferred from the central stud to this one some few months ago.

This is the second case of rabies which has occurred amongst the central-stud mares within a few weeks. One was destroyed a short time ago, but no *post-mortem* examination was made. The symptoms, on the whole, were, however, much the same as in this case.

ON CASES OF DISEASES OF THE HOCK SIMULATING PARAPLEGIA.

By "Beacon," M.R.C.V.S., Punjab, India.

In the February number I noticed a communication from "Recluse" on "Cases of Disease of the Hock Joints simulating Paraplegia."

"Recluse" refers at the very commencement of his article to some cases of subacute paraplegia reported by Mr. Litt, of Shrewsbury, in which the therapeutical action of strychnia is clearly shown and commented on.

Amongst the symptoms, however, described by Mr. Litt no allusion whatever is made to disease of the hocks as in any way accounting for the weakness in the hind extremities shown by his patients. "Recluse's" object, therefore, in bringing forward his own views on paraplegia is evidently with a desire to put Mr. Litt and your readers generally on the right road as to the true nature of the disease called paralysis, which, according to "Recluse's" notions, is a rare disease in India.

Amongst the examples brought forward by "Recluse" in

illustration of his ideas on this subject is that of three thoroughbred stallions belonging or attached to the stud depôt of Sekarunpore, in which district these horses were located.

I have been through a great part of the breeding districts in the neighbourhood of Sekarunpore, and have seen a good many of the stallions in use in these from time to time, and amongst them I observed some stallions which were unmistakably paralysed, and suffering from the effects of spinal disease. So plain indeed to any commonplace observer were these cases that it would have been impossible to confound them with instances of hock disease *per se*.

During my service I have had many opportunities of seeing cases of paralysis in Calcutta, in Bengal proper, in the North-west provinces, and in the Punjab, and I have heard professional men, with far more opportunities of judging and far greater experience than I have had, describe this disease, its symptoms, phases, pathology, and *post-mortem* appearances, so exactly as to correspond with cases of the same kind in my own practice, and I never heard even one professional man attribute the paralysis to ulceration of the hocks, or confound the one disease with the other.

Calcutta and all the lower Bengal districts are noted as a hot-bed for cases of this description, and the number of stallions and other stock which fall victims to the disease in the central-stud districts is well known to professional men and others practically conversant with the subject; but in no case that I am aware of have the symptoms arising from the spinal affection been put down to hock disease instead.

I have known horses in regular work and training, perfectly well one day, quite unable to move the next, hopelessly paralysed from the very onset of the attack; I have seen others, quite sound to all intents and purposes, struck down with the disease in a few hours. I have watched such cases carefully throughout; some became hopelessly diseased, others recovered and went sound afterwards, and their hocks most certainly were not ulcerated.

The evidence of professional men in this country will, I think, bear me out in what I state—men, too, who have dissected scores of spinal cords and hocks, both healthy and morbid.

All classes of horses are subject to the malady, from the racehorse in training and the carefully kept charger to the despised buggy hack. It attacks them under all conditions and is not confined to horses kept in stables; but appears amongst those which are always out in the open air, those

in work, and others, stall-fed. Indeed all horses would appear to be equally liable to attacks of paralysis.

Before I came to this country I observed and also attended a few cases of paralysis amongst horses at home; and I can vouch that the disease giving rise to the symptoms had its origin in the nervous structures,—most certainly not in the hocks.

I need not say that cases of paralysis are more frequently met with out here than in Great Britain, as many an owner of horses can testify; but it has never fallen to my lot to witness a combination of the two evils—paralysis and ulcerative disease of the hocks—in the same subject. It is possible there may have been such cases, but the majority of veterinary surgeons who have had a lengthened experience in the diseases of horses in this country have not met with them.

Just recently I have been in attendance on a case of paralysis, accompanied with the same symptoms described by "Recluse." I quote his own words:—"When in motion the hind action was shambling and jerky to a degree, the feet being thrown outwards from an inability to flex the hock, most palpable when in the act of turning."

The patient to which I allude was struck down quite suddenly, and to my certain knowledge was not lame prior to the attack. There was very little *apparent* constitutional disturbance; the horse appeared muscular and well, and he had a fair appetite. When destroyed I carefully examined his hocks, and I failed to detect the least sign of disease in the articular surfaces, most certainly there were no traces of ulcerative action, but I discovered disease of the spinal cord in the lumbar region of the animal.

To expose the spinal cord of a horse from end to end is no light task; it takes up much time and needs great patience. It likewise requires practical knowledge, careful manipulation, and some experience in the morbid anatomy of this particular structure to enable the observer to detect diseased changes; whereas the hock joints of horses are easily exposed to view, and altogether the anatomy of the parts is more simple. I have known instances in which the natural fossæ or pits frequently observed on the articular surfaces of some of the bones entering into the formation of these joints have been mistaken for marks of ulceration. May I take the liberty to ask 'Recluse" how many times he has taken out and dissected the spinal cord from dead subjects since he first arrived in India? In the *post-mortem* account of the cases recorded by him in the article before alluded to, he goes very minutely

into the anatomy of the hock, but tells us nothing about the appearances which the spinal cord or nerves arising therefrom presented in the same animals. If he confined his attention to the hock joints alone, and failed to examine the medullary cord and brain of the patients which were destroyed, then I maintain that his opinions are valueless. If, on the other hand, he took the trouble to examine the spinal cord in each case, and gave us the results of his researches, his opinion might then carry more weight, at least it would be more satisfactory to know that this point had not been neglected.

Before bringing this letter to a close there is one point to which I would beg to draw "Recluse's" attention.

He says, "Neither could I find any trace of constitutional disturbance, loss of nervous force, or morbid changes in the muscular system; on the contrary, these horses were fat and full at heart, with the sexual desire as strong as ever."

With reference to "loss of nervous force" the very fact of the constant shifting the weight of the hind quarters from one leg to the other" noted in those horses by "Recluse," together with the "jerking and shambling gait, dragging the heels when backing, and in some cases the toe when going forwards, and reeling of the hind quarters," is indicative enough of loss of nervous force and want of co-operation in the muscular movements, traceable to lesions in the nervous structures somewhere.

"Recluse" says that he failed to detect "morbid changes in the muscular system." Did "Recluse" examine the muscular structures under the microscope? or did he take the trouble even to closely examine the hearts of the horses which were destroyed, and note any changes in the muscular structure of this organ in any of the cases? Post-mortem reports in all instances of animals dying or destroyed for incurable paralysis should be full and complete, and, unless they are so, such accounts can add but little to scientific knowledge.

With regard to sexual desire in paralysed patients, it does not at all follow that this function is impaired; on the contrary, I have known this desire to be morbidly increased in some stallions affected with paralysis, and in some instances even when the power of erection of the penis was lost as well, the sexual desire was apparently as strong as it was before the attack of paraplegia.

I have met with some cases of ulceration of the hocks in horses from time to time, but not associated with paralysis in the same patient, and in these particular cases when suffer-

ing from articular disease the action and movements of the joints was quite different to that described in the animals quoted by "Recluse" as suffering from this disease. "Recluse" states that the horses to which he alludes could "march long distances, work in harness, rear, gallop, kick," and also seemed to "enjoy life fully as much and for as long a period as the soundest and most healthy horse in the world."

In all the cases of ulcerated joints, hocks particularly, which I have seen, my experience has been quite different, and the more work such horses had the worse they became. In nearly all the cases of ulcerated hock joints there was atrophy more or less of the muscles of the same leg or quarter accompanied with permanent lameness.

FRACTURE OF THE INFERIOR PORTION OF THE TIBIA.

By D. H. Tombs, M.R.C.V.S., Burford.

In March I attended a hunter, seven years old, which, in being lounged by way of exercise, there being snow on the ground, had sustained a sprain across the loins.

He was so stiff as to be hardly able to turn round in the box. With proper attention, however, for two days, the horse recovered, and on the third day his owner rode him out for walking exercise, and he went perfectly well, manifesting no lameness or even stiffness.

The next morning I had an urgent request to see the horse, which, the groom said, could not put one of his hind legs to the ground. When left on the previous night the horse was quite right.

On arrival I found the horse very lame, the off hock being much swollen, and excessively hot. The region over which the capsular ligament of the hock joint extends was greatly distended, but not beyond this, except that the cap of the hock was enlarged. The foot was not bearing on the ground. I could detect no crepitation whatever, but it was evident that there was severe inflammation of the synovial membrane, probably caused by a fracture of one of the bones of the hock. He showed no marks of having slipped in his box, that being, in my opinion, the most likely manner in which the mischief occurred.

The hock was well fomented, cooling lotions applied, and purgative medicine administered. I was informed

that at night the horse suddenly seemed in great pain, and was very uneasy, his respiration became hurried, and the surface of the body exceedingly hot: mustard was applied to his sides and loins, and in about an hour there was great relief. The owner described the attack as "a strong inflammation all over the body." No doubt the symptoms were due to irritative or sympathetic fever.

After a few days had elapsed the leg became infiltrated below the hock, and there being no improvement the horse was slung, but he was in such pain and so generally uneasy that the owner, thinking the slings caused additional suffering, released him at night.

The case went on: the hock was well fomented, and aconite, arnica, sugar of lead and refrigerant lotions were frequently applied, but without any improvement. The appetite beginning to fail, tonic medicine was given, without, however, any beneficial result. The horse did not lie down, but moved about the box on three legs fairly well. The prognosis was decidedly unfavorable.

About a month after the lameness first showed itself the groom, on going to the stable in the morning, found the horse dead.

Post-mortem examination.—A quantity of fatty matter, extravasated blood, and serum was found between the muscles and the tendons immediately above the hock. The joint when cut into was found to contain dark bloody fluid instead of synovia; the synovial membrane being completely destroyed even to the attached edges. At the extreme inferior part (that is, the ridge) of the posterior surface of the tibia a very small portion of bone was broken off, the fracture of course embracing a portion of the posterior part of the articulatory ridge separating the grooves of the astragalus: this had caused ulceration in both bones, but a flesh-like membrane had formed on that portion of the tibia where the injury had taken place. There was also considerable ulceration in the centre of the concavity between the two convex articulatory ridges of the astragalus (in that spot where ulceration is commonly found); it was also present to a greater or less extent in the cuneiform magnum (especially on its upper surface), the cuneiform medium, upper part of the metatarsus, and at the front of the cuboid bone. The remaining articular cartilage of all the bones comprised in the hock joint was quite discoloured, being of a dark and unhealthy hue.

THE EDUCATION OF THE VETERINARY SURGEON.

By "Observer."

Permit me to offer a few observations upon the subject of education. The fact of having perused the remarks made by Mr. Greaves upon this subject suggests to my mind that a few spare moments cannot be better occupied than commenting upon this gentleman's paper. Mr. Greaves, being a thoroughly practical man, commands attention, and it is this which induces me to crave space in your Journal. We all know what advantages are often derived by the possession of knowledge of some special subjects; but I could never believe that a classical education would ensure the possessor of it to become a good veterinary practitioner, but often the reverse. I agree with Mr. Greaves, that the first step to be taken in the career of a young man is to be articled to a veterinary surgeon for a given time, so that he would have frequent opportunities—daily in fact—of acquiring practical knowledge.

Doubtless the teaching of the schools of the present day is infinitely superior in many respects to what it was in my time. One thing I have reason to know is, the apparent confidence—self-confidence—young men have nowadays. This in all probability arises from frequent examinations in the classes, and which was so seldom adopted formerly. A young man of the "period" thinks he is exceedingly skilled in all matters appertaining to his profession, and he also thinks that the practitioner, who is some twenty years his senior, is entirely behind the age in practical knowledge; or, in plain language, the advanced and experienced man is by the younger member of the profession set down as a fool. This reminds me of a case which occurred some two or three years ago. I will relate it. A horse was taken to a young member of the profession and found to be lame in the shoulder-joint, or adjacent to it. The treatment adopted was that of the *actual cautery punctures* and the application of a *powerful vesicant.* The animal was sent home to the country immediately, got wet on the road, and became ill. The entire limb, from the part operated upon down to the fetlock joint, became diseased; abscesses formed, and this diseased action was also set up posterior to the elbow and extended backwards for some eighteen inches.

The horse was nursed for three weeks, *standing all the*

while; and when he fell from exhaustion, the veterinary surgeon opened the jugular vein and caused his death. The owner brought an action for mal-practice, and at the trial this veterinary surgeon swore that he was *taught the treatment adopted*, which was the same in use *two hundred years* ago!!!

If this is the teaching had recourse to on the other side of the Tweed, all I have to say is that it is a most cruel mode of relieving pain, and one which calls for punishment.

The remarks made by Mr. Greaves in reference to the employment of medicines in the treatment of internal diseases I can with truth endorse. Those of us who have had a long experience in practice are impressed with the idea that a study of *nature's laws*, together with the peculiarities in some of our patients, will enable us to grapple with symptoms without the aid of medicinal substances.

Some time ago I was requested to see a horse suffering from some affection of the chest believed to be pneumonia. I found the atmosphere of the stable charged with ammonia, which led me to remove the animal to a loose box, where he recovered in the space of an hour without the aid of medicine. The ordinary practice adopted in similar cases would have given a case for my attention for at least a week or two.

I find, from daily observation, that lamenesses appear to be but little understood by veterinarians who have not had the advantage of practical teaching in their youth, and especially those who are not gifted with a *mechanical* head. They do not seem to realise the fact, that by action, and almost by action alone, we are enabled to diagnose most kinds of lameness. This, however, is not learned by instruction as some suppose. If time permitted I could relate hundreds of instances where an absence of early practical knowledge has been clearly manifested.

HIGHLAND SOCIETY'S EXAMINATIONS.—"MACKCAM'S" REPLY TO "CENTAUR."

In answer to "Centaur's" notes in the *Veterinarian* for August, referring to fragmentary queries by me in the July number of that Journal, I beg to state that for the sake of consolidating and rendering the profession as useful as it might be, I would respectfully suggest the admittance to the

membership of the Royal College of Veterinary Surgeons, without examination, of all the holders of the Highland Society's Certificate, who desired it, on the payment of a fee of, say not less than £10 10s., on condition that they prevailed on the authorities of the Society to discontinue the granting of certificates except to members of the Royal College of Veterinary Surgeons. The Society would see that this would be a ready means of furthering the interests of veterinary science which has always been a prominent object with them.

Although with educated employers and in the better managed agricultural districts no new comer, unless he be a member of the Royal College of Veterinary Surgeons, has a chance of making a practice, yet we know that in poor districts where small farms obtain, the loud-voiced, tavern frequenting quack successfully competes with the member of the Royal College of Veterinary Surgeons who is unlucky enough to pitch on a district where he finds himself half a century in advance of his employers; hence mutual disgust and pecuniary loss on the part of the member of the profession.

If the successors of these quacks are prevented from assuming the name of "Veterinary Surgeon," in a few years we shall be rid of the genus. The council of the Royal College of Veterinary Surgeons ought years ago to have monopolised the right of conferring the privilege of using the title, and had it done so the Highland Society could not have been persuaded into the granting of "certificates" to students who otherwise would have presented themselves to the Board of the Royal College of Veterinary Surgeon and the quack would ere this have been *non est*.

Some of your readers may be under the impression that the Highland Society has conferred certificates on men who could not pass the examination of the Royal College of Veterinary Surgeons. This is true, but I have known the Royal College of Veterinary Surgeons confer its diploma on a man the day after his failure to obtain the approbation of the society.

Further, the Royal College of Veterinary Surgeons, by admitting these gentlemen to a modified examination, has recognised their status. It may not be generally known that the Society's curriculum no way differs from that required by the Royal College of Veterinary Surgeons of candidates for its diploma. Of course there are holders of the Society's certificate who are so firmly established that they can ignore the Royal College of Veterinary Surgeons, and among these are gentlemen whose works have contributed to the recognition and appreciation of the veterinary art in these latter days.

To "Observer" I wish to say that I look on the letters "M.R.C.V.S.L." as indicating, not that the person using them had studied in London, but that the Royal College of Veterinary Surgeons is the Royal College of Veterinary Surgeons of London, and any Edinburgh or Glasgow graduate may use the "L." The addition of the "E" shows that the person using it either considers the school in Edinburgh to be a Royal College of Veterinary Surgeons, or else he wishes to impose on the public as one possessing a double qualification. It is done all over the north of England, by examiners and other officials of the Royal College of Veterinary Surgeons, and proceeds from thoughtlessness or humbug.

Pathological Contributions.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the month of July, 1875, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

"Also, whether the Foreign Ports from which the Animals are brought are in Scheduled or Unscheduled Countries, and the Number of Healthy Animals brought in the same Vessels with the Diseased Animals, and the mode in which such Healthy Animals have been disposed of, whether by slaughter or otherwise.

SCHEDULED COUNTRIES.

Ports in Scheduled Countries from which brought.	Ports in Great Britain to which brought.	Disease.	Diseased Animals.						Healthy Animals.*					
			Number of Diseased Animals.					Disposal.	Number of Healthy Animals brought in the same Vessels with Diseased Animals.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.		Cattle.	Sheep.	Goats.	Swine.	Total.	
Antwerp . .	London . . .	Foot-and-Mouth	68	2	...	...	70	Slaughtered under the instructions of the Privy Council.	490	6	...	...	496	Slaughtered under the instructions of the Privy Council.
Boulogne . .	„	„	68	...	...	118	186	Ditto	105	40	...	154	299	
Bremen . . .	„	„	24	...	...	...	24	Ditto	183	...	...	...	183	Ditto
Bremerhafen .	Hull	„	1	15	...	...	16	Ditto	92	225	...	...	317	Ditto
Cherbourg . .	Southampton .	„	...	...	...	36	36	Ditto	...	...	...	360	360	Ditto
Hamburg . .	Goole	„	7	...	...	...	7	Ditto	27	...	...	...	27	Ditto
„	Hartlepool . .	„	2	5	...	...	7	Ditto	50	164	...	...	214	Ditto
„	Hull	„	27	...	...	...	27	Ditto	458	30	...	...	488	Ditto
„	London . . .	„	92	1	...	...	93	Ditto	595	396	...	...	991	Ditto
Havre . . .	„	„	185	...	...	...	185	Ditto except one which was slaughtered on board.	325	...	...	...	325	Ditto
Honfleur . .	Southampton .	„	...	4	...	...	4	Slaughtered under the instructions of the Privy Council.	...	100	...	...	100	Ditto
Ostend . . .	London . . .	„	2	...	...	...	2	Ditto	27	...	...	...	27	Ditto
St. Nazaire . .	„	„	77	...	...	...	77	Ditto	159	...	...	...	159	Ditto
Total Diseased Animals .		Foot-and-Mouth	553	27	...	154	734	Total Healthy Animals .	2511	961	...	514	3986	

* "Healthy Animals" means Animals which were not found to be diseased on inspection on landing.

UNSCHEDULED COUNTRIES.

Harlingen . .	Hull	Foot-and-Mouth	...	...	...	4	4	Slaughtered under the instructions of the Privy Council.	215	1	...	143	395	Slaughtered under the instructions of the Privy Council.
Niew Dieppe .	„	„	1	...	...	...	1	Ditto	†58	†7	...	...	65	Ditto
Oporto . . .	Southampton .	„	50	...	...	...	50	Ditto	188	...	...	...	188	Ditto
Rotterdam . .	Harwich . . .	„	...	5	...	...	5	Ditto	61	532	...	...	593	Ditto except three cows which were placed in quarantine.
„	Hull	„	3	...	...	...	3	Ditto	109	...	...	...	109	Slaughtered under the instructions of the Privy Council.
„	„	Pleuro-pneumonia	1	...	...	...	1	Ditto	20	...	...	...	20	Ditto
„	London . . .	Foot-and-Mouth	...	33	...	699	732	Ditto, except seven swine which died at the place of landing.	637	5825	...	1702	8164	Ditto except one pig which died at the place of landing, and two cattle which were slaughtered at at the place of landing.
Tonning . .	„	Pleuro-pneumonia	1	...	...	...	1	Slaughtered under the instructions of the Privy Council.	370	746	...	...	1116	Slaughtered under the instructions of the Privy Council, except the sheep which were delivered.
„	„	Foot-and-Mouth	...	2	...	...	2	Ditto	178	546	...	...	724	Slaughtered under the instructions of the Privy Council.
Total Diseased Animals .		Pleuro-pneumonia	2	...	...	...	2	Total Healthy Animals .	1836	7657	...	1845	11338	
„ „ „		Foot-and-Mouth	54	40	...	703	797							
Total			56	40	...	703	799							

† 1 Beast and 2 sheep were brought from Amsterdam in the same vessel with animals from Niew Dieppe.

"Veterinary Department, Privy Council Office, August 9th, 1875." "ALEXANDER WILLIAMS, *Secretary.*

CATTLE PLAGUE.

Cattle plague prevails to some extent in the following Russian Provinces:—Volhyma, Rasun, Mohilem, Orel, Saratov, Iambov, Tobolsk and Jaraslov. The disease has also appeared in the Governments of Lublin, Minsk, Pensa, Poltawa, Smolensko and Charkov.

It is reported that the disease has nearly disappeared in Herzegovina, and the prohibition against importation into Austria has been renewed.

Hungary is still reported to be free.

Cattle plague is reported to have broken out at Murca, in Croatia and at Brodovalic?

PLEURO-PNEUMONIA.

We have no precise information as to the state of prevalence of pleuro-pneumonia abroad. In this country the disease continues, apparently very little influenced by the measures which are adopted for its repression.

FOOT-AND-MOUTH DISEASE.

From all parts of the country we hear of the extensive spread of foot-and-mouth disease. In reference to the causes of such extension we have nothing new to suggest. The malady is highly infectious, and the constant movement of diseased and infected stock to and from the numerous summer fairs and markets is quite sufficient to explain an increase of the disease towards the autumn months. Large numbers of sheep and pigs are affected as well as cattle.

Reports from Sussex, Surrey, Dorset, Herefordshire, Carnarvonshire, Oxfordshire, Cambridgeshire, Lancashire, Cumberland, and Westmoreland, are very unsatisfactory.

The disease is also reported to have broken out amongst Her Majesty's shorthorn herds at the Home Park, Hampton Court, where some fifty or sixty animals have been attacked.

In Carnarvonshire the increase of the disease is so considerable that the Pwlheli agricultural show has this year been abandoned, and the Carnarvonshire and Anglesey show postponed until October.

The existence of the disease in Ireland is now admitted, and it is stated on good authority that the annual Cattle-show of the Tipperary Farming Society will not be held this

year, in consequence of the prevalence of the malady in the district. Fresh outbreaks are also reported in the King's and Queen's Counties, but of a mild form.

The *Agricultural Gazette* of Aug. 14 reports as follows in reference to the spread of foot-and-mouth disease:

"This week's returns show upwards of 8000 cases of foot-and-mouth disease in Dorsetshire. The Chief Constable's returns for the week ending August 8 (issued on Monday evening) show a sudden and extensive outbreak of foot-and-mouth disease in the district lying between Exeter and Tiverton. For several months past the returns had showed a steady decrease in the number of animals affected throughout the country; but during the past week there has been an increase of 490 sheep, 34 pigs, and 51 cattle. Of the sheep no less than 404 are returned from the parish of Newton St. Cyres, and in the same parish 46 cattle are suffering. Forty sheep have been seized with the disease in the parish of Halberton, near Tiverton, and 46 at North Lawton, a few miles from the north-eastern border of Dartmoor."

"Alarming reports as to the spread of foot-and-mouth disease in Cumberland and Westmoreland reach us from Carlisle to-day. In the first-named county the disease is said to exist in 107 farms, where nearly 1000 cattle and sheep are affected. Pleuro-pneumonia and scab are also prevalent. In Westmoreland 300 cattle and sheep on 32 farms are diseased. From Lewes we hear that cattle disease is alarmingly increasing in East Sussex, more than 1000 fresh cases being reported this week in the Lewes district. In the Hailsham district there is about the same increase reported."

The *Daily Telegraph* of Aug. 7, commenting on the spread of cattle disease, says:—"The effect upon the market, so far, has been no very marked increase in prices. Present rates, indeed, have been sustained for many weeks; and it is only by comparing the prices now obtaining, with those of the same period last year that the steadily increasing dearness of meat can be estimated. It is only in view of the possibility of scarcity that any uneasiness would be warranted, and it is fervently to be hoped that such a contingency will be averted by some well-advised action of the Privy Council. There is a real danger, however, of the foreign importers, smarting under what they consider to be the exceptionally severe and unnecessary restrictions placed upon their trade, withdrawing from our markets so long as these restrictions are enforced. That it is in their power to inflict upon the community an amount of injury and distress frightful to contemplate can hardly be disputed. Scarcity of meat food means—besides

the infliction of serious embarrassment to all housekeepers with narrow incomes—inevitable sickness and hastened death to vast numbers of persons amongst the already low-fed and the young and aged of the population. The task of untying the Gordian knot of this difficulty is one that will tax to the very utmost the skill of the Duke of Richmond; and it cannot be concealed that the demands of the occasion are as importunate as they are grave."

We do not profess to understand what is meant by "unnecessary restriction," and so long as meat maintains a high price, we have no fear of the importers withholding foreign supplies.

DEATH OF HORSES IN AUSTRALIA FROM THE SUPPOSED POISONOUS EFFECTS OF THE *LOLIUM TEMULENTUM.*

The *Melbourne Argus*, of May 4th, says "that several valuable horses having recently died from inflammation of the stomach and intestines, the owners requested Mr. Graham Mitchell, V.S., to investigate the matter. From the *post-mortem* appearances, he suspected that something injurious had been given to the animals in their food, which, on being examined, was found to contain a large proportion of *lolium temulentum*. Samples having been submitted to Baron von Mueller and Mr. Cosmo Newbery, these gentlemen confirmed the opinion given. As this seed is frequently found mixed with wheat and barley, it would be of importance to have this matter thoroughly investigated."

DISEASE AMONG THE PIGS IN IRELAND.

Various statements have appeared in several of the daily papers to the effect that a very fatal malady has broken out among the pigs in the South of Ireland, especially in the district around Waterford. From the imperfect accounts which have as yet reached us, we incline to the opinion that the pigs are suffering from *typhoid or enteric fever*. This disease is by no means uncommon in Ireland, and when once it has gained a footing in a district, is sure to spread and assume a fatal character for want of all sanitary regulations on the part of the owners of the animals. Typhoid fever of pigs, which has long been known to be contagious, is now also proved by the recent experiments of our colleague Mr. Axe to be infectious in the ordinary acceptation of the term. We hope to be able to speak more positively of the true nature of this Irish-pig disease, as we have put ourselves in communication

with persons on the spot who are well calculated to give the information we seek to obtain.

Facts and Observations.

Nuisance from Shoeing Horses.—Vice-Chancellor Bacon had before him the case of Gullich *v.* Tremlett on June 9th. A suit instituted by the New British Institution, in New Bond Street, a picture gallery, seeking an injunction against the defendant, who carries on the business of a veterinary surgeon in adjoining premises, to restrain him from certain acts of nuisance. These were offensive effluvia arising in the process of singeing horses, burning assafœtida, and the noise and vibration from forging horse-shoes.—His Honour said that on the main points of the case he was of opinion that a nuisance had been maliciously caused by the defendant, and, therefore, he must grant a perpetual injunction with costs. This, however, would not prevent the defendant from carrying on his business so as not to be a nuisance.

Absorption through the Skin.—Wolkenstein, from experiments made with frogs, cats, rabbits, and mice, finds—1. That the skin is permeable to dilute but not to concentrated watery solutions. 2. An increase in the temperature of the solution augments the absorptive capacity of the skin; and, in fact, the amount of fluid absorbed stands *in limine* in direct relation to its temperature. 3. In young animals the skin absorbs better and more quickly than in old animals of the same species. 4. Hair and wool interfere with the rapidity of absorption. 5. A few alkaloids are capable of being absorbed, and giving rise to the peculiar symptoms of their toxic influence.

On Narcosis produced by Nitrous Oxide. By V. Nussbaum ('Chem. Centr. Blatt,' 1874, 359).—The author compares the use of nitrous oxide with that of chloroform as an anæsthetic, and gives decided preference to the latter, both on account of its greater safety and of the longer duration of its effect, the insensibility produced by nitrous oxide not lasting long enough for most surgical operations. He says nothing, however, about its use in dental surgery, which is now its chief, if not its only application. He further objects to nitrous oxide as being difficult to prepare and to transport in the state of gas, but appears to be unaware that for the purpose in question it is preserved and transported in the liquid state.—*Journal of the Chemical Society.*

THE VETERINARIAN, SEPTEMBER 1, 1875.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

RESTRICTIONS ON THE IMPORTATION OF FOREIGN ANIMALS.

SOMEBODY'S interests must suffer whenever freedom of action is interfered with, and it is not therefore to be wondered at that the importers of foreign cattle object to the regulations which in certain cases prevent the free movement of imported stock over the country.

The case from the importer's point of view was stated, we may presume as strongly as it could be, by the different speakers at a deputation which waited on the Lord President of the Council, on Saturday, Aug. 7th.

Mr. IRVINE, Chairman of the Associated Foreign Importers, submitted that foot-and-mouth disease restrictions should be expunged from the existing regulations affecting the importation of foreign animals—among other reasons, because foot-and-mouth disease was prevalent among cattle bred in the United Kingdom some years before foreign animals were allowed to be imported. Restrictions on importation, although rigorously enforced for many years, had proved to be useless, and had considerably increased the price of meat. It was generally believed to be an epidemic, a passing evil, and beyond control. Reference to the most eminent veterinary authorities would find them almost unanimously of opinion that the existing regulations should be withdrawn. At present foreign animals were subject at the place of landing to regulations which were not applied to home-bred animals exposed for sale in any market of the United Kingdom. In the latter case the animals suffering from disease only were required to be slaughtered, while the remaining were allowed to go all over the country; whereas in the case of foreign animals, if one animal of any class was even slightly affected, the whole of the cargo was ordered to be slaughtered, by which enormous loss was sustained by the importer and such difference in practice was very detrimental as well as unfair to the foreign trade.

The difference in the treatment of foreign and English stock under the same sanitary, or rather unsanitary conditions was sharply put, and we do not hesitate to allow that the statements are free from exaggeration.

According to present arrangements, if cases of foot-and-mouth disease are detected among animals in a fair or market, in this country, that is to say, in one of the few fairs or markets where anything like a system of inspection is adopted, the diseased animals only are detained, the rest are allowed to go free. The speaker, however, forgot to mention that this freedom from restraint is permitted equally to foreign and home-bred stock in fairs and markets, and further that such freedom is only obtained by favour of the local authorities who have power to make regulations to prevent the movement of animals which have been herded with diseased ones.

In the case of foreign animals which are landed from unscheduled countries, it is true that a single case of foot-and-mouth disease causes the slaughter of the whole cargo, for the simple reason that one case of disease indicates the presence of contagium, and observation proves that the one is certainly followed by many.

The real question, then, seems to be, is the fact that infected animals are permitted to be moved from fair and markets by sea and land all over the United Kingdom a sufficient reason for the equally free admission of infected animals at all the ports? and without any leaning to the side of the so-called "agricultural party" we must contend that it is not.

Foreign stock is sent here avowedly for the purpose of being slaughtered for human food; *primâ facie*, therefore, there is no hardship inflicted by the act of slaughtering such stock. If the dealers get less for the meat under such circumstances the consumer ought to gain; practically, however, we know that the consumer does not; and butchers tell us that they pay more for animals at Deptford than they do at Copenhagen Fields; however this may be, the condemned animals are slaughtered and sold, just as they would be under any circumstance if they came from a scheduled country, and so

many cases of disease are prevented from getting into the country and constituting new centres of infection.

It is quite true that we take little or no care to prevent the spreading of foot-and-mouth disease among our own stock; but we are not therefore bound to add to the number of cases by knowingly admitting diseased animals from abroad. Our terms of contract with the foreign cattle dealer are by implication "Send us animals, which after a few hours' detention at the landing place, can be passed by our inspectors as free from disease, and we will admit them to our fairs and markets and deal with them precisely as we deal with the animals which have been bred in the country;" but failing the one essential condition of freedom from contagious disease, we must take summary measures in order to prevent them from spreading such disease. When as at this time foot-and-mouth disease exists in nearly every exporting country, the regulation tells somewhat harshly against the importer, but it is scarcely under such conditions that the Privy Council can be expected to revoke all protective restrictions.

Extracts from British and Foreign Journals.

ON THE ORIGIN OF LIFE.

By Lionel S. Beale, M.B., F.R.S.*

The far-fetched conjectures seriously advanced by some physical speculators concerning the origin of life serve to show what extreme difficulty has been experienced by those who have attempted to construct a plausible hypothesis by which the conversion of the non-living into the living might be reasonably accounted for. One great authority, dissatisfied with every suggestion, and being evidently convinced that no physical explanation of the origin of life upon our globe would ever be discovered, despairingly submits to us the proposition that life did not begin here at all, and that

* Portion of a lecture delivered before the Royal College of Physicians.

our earth was first peopled by the offspring of germs brought to us upon a fragment broken off from some distant orb that teemed with life. Whether even the simplest living forms would have survived after such a ride through space unfortunately had not been determined by experiment, so the idea of our fauna and flora being derived from those of another world found little favour, and probably all who have considered the subject would now agree that it is probable that life-forms originated upon our globe, though there might be great difference of opinion concerning the precise mode of their origin.

"Evolution" is now supposed to solve the difficulty of life formation; but this term has had at least two meanings assigned to it. By some it has been restricted to the living world, while others have given to the term "evolution" a much wider signification, and have maintained that it should include not only the evolution of living forms from pre-existing living forms, but the formation of the living out of the non-living. There is, it is scarcely necessary to point out, the widest possible difference between these two doctrines; for while the one teaches that all living forms came direct from living matter without accounting for the origin of life at all, the other is a tenet of the fiery-cloud philosophy which teaches as a cardinal point that the evolution of life is but one of the great series of changes in which the evolution of the cosmos is comprised. But surely such an idea may, for the present, be regarded as a conjecture so extravagant as to be unworthy of serious consideration. Facts are wanting, and the arguments advanced in favour of the hypothesis are such as cannot have much weight, since it has been deemed necessary to bring forward, in their support, utterances of a prophetic character.

If, then, evolution is restricted to the living world, the origin of the first living thing will be still unaccounted for. The presence of a very simple living form seems to have been assumed; but whether that being came of itself from the non-living, or arose in consequence of some prior changes, or was formed by an act of creative interference, is not suggested by the terms of the particular form of the hypothesis under consideration. Neither is the precise nature of the first living substance indicated, and we are even left in doubt whether one or two or many forms of living matter came into existence at the first formation of life.

Now, with reference to the origin of the first living matter, several not improbable suggestions present themselves to the mind, in all of which, however, it is assumed that the change

from the non-living to the living was sudden and abrupt, and not gradual.

First, we may conceive that one form of living matter was produced direct from the non-living, and that from this all future living was evolved.

Secondly, we may prefer to imagine that more than one form of life originated from the non-living at or about the same time.

Thirdly, we might think it more in accordance with facts to conceive that several different kinds of bioplasm originated in the beginning of an epoch of life, from which all life of that epoch was derived. New forms originating anew in the next epoch, the results of evolution from the first gradually dying out as those of the second epoch increased and became dominant. As life-epoch succeeded epoch, new forms of bioplasm may have appeared as old forms of life died out.

But the above by no means exhaust the list of what I would term the reasonable hypotheses concerning the origin of life that may at once be suggested. All of them involve in some form or other the admission of a remarkable change in capacity or power not to be accounted for by physics. In all, the communication to matter of powers or forces which it did not always possess, and which it is conceivable might never have been communicated at all, is suggested.

Whether this communication of new powers occurred once only or was repeated at many successive periods in the remote past,—whether it be reasonable to consider a recurrence of the process in the future as probable or improbable,—I shall not now venture to discuss.

What I particularly wish we should keep before our minds is that facts and arguments render it much more probable that the passage from the non-living to the living is *sudden and abrupt, than that there is a gradual transition or scarcely perceptible gradation from one state to the other*. I should, however, clearly state that this inference is in opposition to the views of many authorities, and in particular is opposed to the clearly expressed opinion of one of the greatest discoverers and most acute thinkers of our time, who maintains that the conversion of physical into vital modes of force is continually taking place. It is suggested that the change from non-living matter to living matter is a transition easily effected and continually occurring. Of the facts in support of so startling a proposition I confess I am ignorant, nor have I succeeded in my efforts to discover any facts in the writings of those who appear to have accepted the conclusion

in question, which has never failed to enlist advocates in its support from the time when it was believed that highly complex living forms were produced from earth or dew, to the present day, when the advocates of the doctrine are so terribly restricted in the discovery of parentless living particles.

We have now reached the point where we are brought face to face with the modern developments of the old doctrine of spontaneous generation.

I cannot but remark that the more minutely investigation is carried out—the more thoroughly and intently facts bearing upon the matter are examined—the more improbable, in my judgment, does it appear that any living form should be derived direct from the non-living. Notwithstanding all that has been recently written upon this subject, I cannot but feel surprised that at this time many good reasoners should decide in favour of the *de novo* origin even of bacteria. Whether we consider the matter from the experimental side only, or study the evidence obtained in a general survey of nature, or carefully reflect upon the facts learnt from investigations concerning the properties of living and non-living matter, with the aid of the most perfect instruments of minute research now at command, or from other standpoints, the conclusion seems to me irresistible that the verdict of a jury of well-educated men would be against the direct origin of any form of living from any form of non-living.

Driven from one position to another, the advocates of spontaneous generation have entrenched themselves in the unassailable stronghold of experimental investigation. Here they may hold their own for any length of time, for no one can say what may not be demonstrated by new experiments in the time to come. Nay, although the conflicting results of different skilled experimenters, whose experiments have been conducted upon the same principles and professedly in the same way, even to the minutest details, may shake the confidence of some in the experimental method of inquiry, it is certain that the teachings of experiment will finally prevail over all other information.

But the modern advocate of abiogenesis should be skilled not only in explaining facts, but in explaining facts away. The fact that bacteria germs exist in all parts of the higher organisms, in the most internal parts as well as upon the surface of man's body, is to be accounted for by their spontaneous origin! Although millions are to be found about the mouth and upon the surface, and it can be shown that it is easy enough for them to get from the outside amongst the

tissues within, we are asked to believe that those inside originated there direct from the non-living, or, as an alternative proposition, that they were derived not from parental bacteria, but by transmutation from some of the constituents of the tissues, on the principle that a living fungus comes not from a fungus germ, but from a dying tree. The next suggestion will be that man, after all, is but an aggregation of lower forms, peculiarly conditioned for a time, but which assume their ordinary forms when their environment shall be modified, as it must be at death.

Erroneous conclusions of many kinds have been employed as facts in support of abiogenesis. When one finds that it is believed that fungi may be developed from oil-globules and other living organisms of a much higher type, produced without parents out of organic matter, one fails to see any limit to the support that may be gained to the cause. Volumes of facts and arguments hitherto advanced in favour of abiogenesis may be republished without in the slightest degree modifying the real state of the case. What is now required is well-devised experiment, and that is all. No resuscitation of old arguments and doubtful facts, however ably the task is performed, will in the slightest degree increase the cogency of experimental proof, and in the absence of new experiment such facts and arguments will avail nothing.

I think we may be satisfied that before long the advocates of spontaneous generation will have to rely upon the production of the lowest organisms only. The only view in any way tenable at this time is, that such organisms as bacteria are the only ones that can, under any arrangement of conditions possible to an experimental inquirer, be formed anew, and that these alone, at any period of the world's history, sprang direct from the non-living. All are of extreme minuteness, many of the forms being so very small that they could not be identified with a magnifying power of less than eight hundred diameters. These are the smallest, simplest, and probably lowest forms of life known. That multitudes do now spring from pre-existing forms is absolutely certain, for the process can be seen. Whether some spring direct from the non-living is the question. Those that are supposed to be formed anew are very like those that have had a progenitor, and from those supposed to have been produced anew, forms exactly like those derived from undoubtedly pre-existing forms result. It cannot be pretended that new forms of existence are produced anew. No matter how the conditions are varied, the living forms supposed to result

resemble known living forms, and give rise to forms of the same kind.

But, as I have before remarked, the question of the origin of bacteria can be only determined by experiment. All irrelevant considerations in favour of abiogenesis ought now to be left in abeyance. The assumed *de novo* origin is contrary to what goes on throughout the whole kingdom of nature, and the only exception which there is the remotest possibility of establishing is the spontaneous origin of some of these lower forms of life. While, therefore, it is allowable to permit ourselves to be influenced by general evidence against a new and exceptional doctrine, which a few observers seem very anxious to establish, we may fairly insist that only evidence of the most convincing and demonstrative kind should be accepted in its support. As regards the validity and reliability of the most recent experiments for and against the doctrine, I offer no opinion. Time must be allowed for others to repeat the experiments; and, for my own part, I could express no opinion unless I had been present and had carefully watched each experiment in every stage. As far as I can judge, the reports of recent results are not more convincing than were those that were adduced years ago, many of which have been discarded and proved to have been unreliable from want of care, or from defects in the method of procedure.

If the formation of a bacterian germ, direct from non-living matter, be possible, three very remarkable series of changes, as it seems to me, will have to be brought about. Whether any means will ever be discovered of effecting these changes is surely most doubtful.

First, the atoms of the non-living substances must be separated from their combinations.

Secondly, the atoms will have to be rearranged to constitute groups of which the organic matter is made up.

Thirdly, the groups of atoms must be made to live.

What facts known, I would ask, render it likely that air, rarefied or condensed, or pressure of any degree or of any special kind, or any degree of heat, or light, or any conceivable modification of physical or chemical conditions, would at the same time account for the pulling asunder and joining together of atoms, and for the conference of new and peculiar powers of growth, of movement, of division, and the formation of new substances? In short, it is not easy to conceive, in the imagination, the several steps which result in the formation of a living bacterium even from *organic matter*. But the first germ must have sprung direct from matter that

never had lived nor manifested phenomena in a way like those of life. Let us try to imagine a living germ being produced out of non-living matter. Atoms of many substances must be conceived as separating from one another, and then recombining. Attractions and affinities must, in the first place, be overcome, then the forces that effected the change must, cease to operate; and these must, somehow, be exerted again. By what means the separation of atoms is effected cannot be suggested, neither can we conceive how the atoms are caused to recombine in a definite way. The supposed phenomena would be really more complicated than I have represented; for atoms are not related to one another —atom to atom, but group to group. How the atoms are grouped, and how the groups are related; how the groups act and react upon one another, and new groups are formed; what makes the atoms combine and begin a new course which may continue on and on for ever,—cannot be conceived. Upon the whole, the production from non-living matter of any living form, however simple, must be regarded as most improbable.—*Microscopical Journal.*

SHEEP WINTERING IN KANSAS AND VIRGINIA.

The following notes on sheep wintering in the great western plains of America, taken from the *American Agriculturist*, are interesting to stock farmers generally, and will be especially interesting to Mr. Grant's many friends in this his native country:—"The experience of the past winter in keeping sheep on the western plains has been of great value. It has shown that, with proper protection and comfortable shelter, any breed of sheep—those even which require very great care in the east—may be kept with very little expense for feed. The open pasture is sufficient to keep them in fair condition during fine weather, and it is only when the occasional short storms prevail that hay need be given to them. But the heavier breeds of sheep that have been used to better fare than pasture alone, while they may be kept in ordinary condition on this fare, can be kept increasing in weight, and made to yield a heavier and better fleece, by the daily ration, in the winter, of a pint of corn per head. The experience on this point during the past winter of Mr. George Grant, of Victoria, in Ellis Co., Kansas, is very pertinent. This gentleman

informs us that his flock of 7000 sheep, consisting mainly of native ewes, with rams of pure Leicester, Lincoln, Cotswold, Southdown, Shropshire, and Oxforddown blood, and half-bred lambs of last year, have passed through the winter very successfully under the rational treatment given to them. The shelter or corral provided for them is a building with stone walls, covered with a peaked roof. It is square in shape, with sides about 570 feet long. A commodious house of two storeys is built at one corner for the shepherds. The flock is brought into the corral every night, and is kept inside during stormy weather. At these times the sheep are furnished with hay and a pint of crushed corn per head. At other times they are turned out to pasture in the morning upon the prairie, and are brought back in the evening. As an experiment, a flock of 2500 has been kept separate from the rest, and each sheep of this flock has received a pint of crushed corn every night on their return from the pasture. The improvement in this flock has been marked, and, as might have been expected, the extra feed has been profitably expended. Mr. Grant's success has been so encouraging that he is permitting his flock to enlarge by natural increase until his extensive tract of land shall be well stocked."

Another enterprise in this direction has been set on foot by Mr. W. B. Shaw, of Syracuse, which is about 200 miles south-west of Victoria, and near the eastern boundary of Colorado. In both these places the buffalo grass furnishes the chief pasturage, and the "blue joint" hay. Mr. Shaw began with 220 sheep, a mixed flock of Cotswolds, Leicesters, Southdowns, and merinos, which arrived on the ground in October last, and up to January 1st grazed without interruption on the open prairie. From the 1st to the 21st of January a succession of cold days with snow on the ground kept the flock in the fold. During this time about 600 pounds of hay was fed daily, which was an amply supply for the whole flock. At this period, too, the lambs began to appear, and three or four of them were lost, through inexperience rather than from the inclemency of the season. After January 21st the sheep were again turned on to the pasture. Mr. Shaw's experience has been equally favorable with that of Mr. Grant. His shed is made of cotton-wood poles and coarse hay from the river bottom, and is built around an enclosure 200 ft. long by 100 ft. wide. There is a second yard, 150 by 135 feet, upon the south side of the sheep yard, with an open shed facing the south, and divided into pens 9 feet deep, for cows or sheep, and a pig pen 35 ft. square, at the south-east of the sheep yard. These sheds are made of inch

boards, nailed up and down upon the framework, and the roof is of boards, with sufficient pitch to shed rain perfectly. With these descriptions of sheep sheds, and the knowledge that proper shelter is found absolutely necessary for the welfare of the sheep everywhere, those who are keeping sheep, or desirous to do so, will have no difficulty in making plans to meet their requirements in any part of our wide country.

SIEDAMGOVTZKY ON THE THERMOMETRY OF DOMESTIC ANIMALS.

Professor Siedamgovtzky gives the following results of his observations in the *Deutsche Zeitschrift für Thiermedicin und Vergleichende Pathologie.*

1. *Horse.*—The medium temperature of 100 horses was 38·0° Cent.; the highest reached was 38·2° Cent. The average was taken of readings in the morning, at midday, and in the evening. Krabbe found the medium temperature to be 38·1° Cent.; Peters, 37·5° to 38·2°; Fleming, 38·75°; Davy, 37·5°; Sonnenberg, 37·38°; Prevost and Dumas, 36·8° Cent. *Influence of Age.*—In a young foal, five days old, the temperature was 39·3°. The average temperature of horses from two to five years was 38·1° Cent.; from five to ten years, 38°; from ten to fifteen years, 38·2°; from twenty years and upwards, 37·9° to 36·9° Cent. *Influence of Sex.*—The mean temperature of stallions was 37·8°; of mares, 38·2°; of geldings, 38·05°. *Influence of Time of Day.*—The maximum was found at 6 p.m., 38·2° Cent.; the minimum at 4 a.m., 37·5° Cent. *Influence of Feeding.*—A rise occurred from three to five hours after feeding of from 0·2° to 0·8° Cent. *Influence of Drinking.*—Water of a temperature of from 8° to 12° Cent. lowered the temperature from 0·3° to 0·5°. Thus feeding and drinking have opposite effects. *Influence of Exercise.*—Exercise raised the temperature, but in different degrees in different animals. *Influence of External Temperature.*—Horses placed in a stall at a temperature of 25° Cent. showed a temperature four hours afterwards of from 31° to 43° Cent. There was a rise of the normal of from 0·4° to 1·2° Cent. A draught of air produced a fall of 1° Cent. Great cold in winter, when the air had a temperature near freezing-point, produced a rapid refrigeration of the skin, but showed a rise of 1·2° Cent. above the normal in the rectum. This occurred

while the temperature of the stall was 10° Cent., but after the animal was a short time in the open air there was a reduction below the normal of 0·5° Cent. *Influence of Bleeding.*—The temperature was reduced 0·1° Cent. by bleeding to the extent of from 5 to 6 lbs.

2. *Cattle.*—A nine-year-old cow gave 38·9° Cent. (Krabbe found in the cow 38·8°; Davy, 38·9°.) The daily fluctuation was small as compared with the horse; the minimum was, at 12, midnight, 38·7°; the maximum at 5 p.m., 39·1°. The effect of food was not noted.

3. *Sheep.*—284 measurements in the rectum of a one-year-old wether gave from 38·5° to 41·8°—a mean of 40·2° Cent. (Fleming found 40·25°; Krabbe, 39·8°.) The variation found in successive readings is much greater than in the horse or in cattle. Unshorn sheep (157 readings) showed a mean temperature of 40·56° Cent.; while shorn animals (from three to twenty-four days after shearing, ninety-four measurements) gave 39·73° Cent.

4. *Swine.*—169 readings taken from four swine gave 38·5° to 40·8° Cent., or a mean of 39·6° Cent. (Krabbe found 39·1°; Fleming, 40·5°; Gurlt, 40° to 41·2° Cent.)

5. *Dogs.*—190 readings in seventeen dogs gave 38·3° Cent. (Fleming gives 38·5°; Krabbe, 38·7° Cent.)

J. G. McKendrick, M.D.

—*London Medical Record.*

DANILEWSKY ON THE RESPIRATION OF MUSCLE.

B. Danilewsky (*Centralblatt für die Medicin. Wissenschaften*, No. 46, 1874) has investigated this subject in Sczelkow's laboratory. It is a well-established fact that muscular activity causes an increased consumption of oxygen in the muscles. As to the significance of this fact, physiologists differ in their opinions (Hermann and Ranke). The absorption of oxygen, as well as the excretion of carbonic acid, both of the active and passive muscles (gastrocnemii of a frog), at different temperatures, were carefully measured by means of a special apparatus devised for this purpose. The muscles were weighted with one gramme. From a table of the gas-analyses, which were conducted after the method of Bunsen, he arrived at the following results:

1. The quantity of carbonic acid excreted by a tetanized

muscle, in comparison with that by a passively moved one, is smaller, the higher the temperature.

2. The absorption of oxygen by the active muscle always remains behind that of the passively moved one. It may, therefore, be concluded that this does not stand in direct connection with the process of muscular contraction. This is explained by the unequally greater contact of the passively moved muscle with new air than in the tetanized one. The increased absorption of oxygen by the passively moved muscle produces almost no corresponding increase in the excretion of carbonic acid. One must, therefore, assume that both factors in the respiration are, within certain limits, independent of each other; that muscle can take up a very large supply of oxygen and conceal it for a long time in its plasma without excreting it in the form of carbonic acid. The absorption of oxygen increases in active muscle with the temperature.—*London Medical Record.*

INOCULATION FOR PLEURO-PNEUMONIA.

The report of the chief inspector of stock in New South Wales, to the Legislature there, on the number of opinions in favour of and against the prophylactic powers of inoculation, is a truly wonderful document. Probably for the first time in medical history has a keenly debated point in pathology been determined by the political shift of a *plebiscite.* If all similar questions are to be decided in the same fashion the reign of dogmatic authority in medicine is about to be restored. The mode of counting polls or noses may serve well to silence clamour in the forum or at a rowdy meeting, or to prop up the rickety throne of a decrepit potentate; but to formulate a fine problem in public hygiene or veterinary police by such a preposterous procedure is certainly a piece of egregious, if not actually insane folly. As the calibre of intellect that could resort to such a device cannot be taught by abstract reasoning, but always wants an illustrative example, let us confute the inspector's conclusion by his own mode of arguing. If, a year ago, the like nose-enumerating censes had been resorted to in Melbourne for the purpose of deciding the medical question of the contagiousness or non-contagiousness of typhoid fever, what would have been the result? Why, that the non-contagionists would have carried the day by 99 out of every 100; but take the poll to-day, and, perhaps, not three non-contagionists could be found in the colony. Nor would this change wholly proceed from the mere fickle in-

stability of medical opinion, but be purely the outcome of better knowledge, just as will undoubtedly happen under more enlightened acquaintance of the bucolic mind with the principles of veterinary medicine.

To refute objections formerly taken by us to the mad scheme of compulsory inoculation—objections against which the powerful dialectics of the chief inspector were unavailing—the following expedient appears to have been hit upon:—Circulars were distributed amongst the stockowners of the colony, asking for their individual opinions for or against the efficacy of inoculation as a preventive of pleuro-pneumonia. To those 1145 circulars there would appear to have been obtained 804 replies, coming from all parts, from Albury to Young. Of the 804, there are just 310 who may be allowed to speak from actual experience in favour of the inspector's views. There were 341 who returned no answer, 183 who thought neither one way nor other, 81 against the practice, and 452 who, having no inoculating experience, only offered an opinion at second hand. Now, surely this is not the unanimity of opinion that the public have been led to understand existed in the minds of stockholders upon this subject? Furthermore, no details are given of the opportunities or capacity for judging of those who have offered positive belief in the matter. We know not whether they owned one cow or 1000 oxen; whether they were familiar with experimental methods of testing scientific theory; what pains were taken to eliminate sources of fallacy; or whether their trials are made crudely by rule of thumb only. We have had ample experience of how easily men are misled into errors and blunders through following their own pre-conceived notions on such occasions. Our own pleuro-pneumonia commissioners afford us an excellent warning upon that point. They were to a man all non-contagionists, from Ralph to Rowe and M'Coy, and they fetched healthy cows from Tasmania, where pleuro never had been, placed them in stalls beside diseased animals, got here in abundance, inoculated them in various crucial ways, and then declared their inability to communicate the fever by contagion, reported the result to the Legislature, and based upon their failure an advice deprecating any further legislative interference or alteration of their veterinary police; and yet, the Government printer's ink was hardly dry upon their notable report before a counter-report came from the butchers of Geelong, who had bought for slaughter the experimental bullocks, that the animals were all diseased, unfit for human food, and demanding back their money.

Unfortunately, the advice of that incapable commission was listened to, and there was no effort at legislative check to the progress of contagious lung fever; and equally disastrous results

to the stock of the country would assuredly follow any enforced rule of inoculation based upon similarly unproven theory.. The Legislature paused when it ought to have taken action, and there is now some danger that it may hastily act when it ought to wait. It ought to wait, at any rate, until the European *savans* shall have opportunity of knowing really upon what slender Australian facts their opinion of the value of inoculation rests. It is confessedly upon these Australian alleged facts that Professor Williams and Mr. Fleming form their opinion of the utility of inoculation, and from them, too, in an endless circle of opinion, the Australian inoculator runs round his argument. But much more cogent would it have been if Mr. Fleming had, instead, applied the arguments against inoculation in sheep-pox to show like dangers from similar practice in pleuro, for all that is said against the one practice will, *mutatis mutandis,* be found applicable to the other—viz. that "keeping the virus in an active state all the year round is a source of permanent danger, so far as the propagation of the disease is concerned." Much more of the same tenor could be cited from Mr. Fleming's recent work on *Veterinary Sanitary Science and Police,* but as the chief inspector and all other inspectors will hold it their conscientious duty to study carefully that text-book, further citations would be supererogation. The book, elaborately compiled, will, if read, prove of great worth as a guide to those anxious to prevent the inroad of contagious fevers amongst Australian flocks, from which they are as yet happily free. It is true that on some points it is not up to the latest scientific information. For example, in sheep-pox no reference appears to Dr. Klein's investigations, showing the true character of the contagious agent, nor to Lebert's proofs that anthrax is a true *mycosis,* although those demonstrations were made some months prior to the date of Mr. Fleming's publication. They may not be final proofs of the true nature of such *contagia,* but they are provisionally accepted by the highest scientific authorities, and therefore deserved notice in so comprehensive a treatise, for as proofs they form the very basis of its principles.

Once more, we repeat, that as Professor Williams and Mr. Fleming have, by their own candid admissions, no experience of their own to guide them in forming an opinion of the merits of inoculation, their statements of the supposed results are to be taken *cum grano salis,* as mere text-book compilations; and the sources of exact information which they relied upon are, as far as Australian experience enables them to judge, amongst the forms of false facts that abound in medical histories, often greatly trusted, but ever proving more dangerous than absolute ignorance.

In conclusion, we would urge upon colonial legislatures to adopt some more rational means of arriving at sound conclusions about scientific points that are to serve as reasons for practical legislation than this rough and ready ingathering of loose-formed opinion. If legislation there is to be, let real inquiry go before it—inquiry by exact and determined experiment. It is easy enough to gather proofs of "cures," if they be the means of settling doubts. When St. John Long was tried for manslaughter, there were crowds of witnesses, in a string of carriages as long as Collins Street East, to testify to the power of the metallic tractors; for doctors or quacks can prove everything by "cures;" but that is not nowadays accounted scientific method. To illustrate this by an apt example—the true way, we repeat, of rudimentary teaching—we recall Mr. Bruce's argument that pleuro-pneumonia and measles could not be pathologically allied, because the former was a very fatal fever, while the latter was "so very amenable to treatment." Will Mr. Bruce, after the past eight months' experience of measles, venture to repeat the argument?

And, finally, if we may not yet awhile have a proper scientific veterinary school founded at the University, and richly endowed by those who derive boundless wealth out of that source which it would be the object of such a school to keep pure and uncontaminated, and therefore preserve the means of wealth, let us at all events have no false substitute—*quasi*-scientific nostrums.—*The Australasian.*

PARASITIC VEGETABLE FUNGI, AND THE DISEASES INDUCED BY THEM. (Discussed from Special Standpoints.)

By Staff-Surgeon Thomas Colan, M.D., R.N. (Communicated by the Director-General of the Medical Department.)

How Parasitic Vegetable Fungi are communicated to and enter the substances they are found in.

Fungi develop by means of spores or seeds, throwing out a mycelium, as the spawn of mushrooms, and this mycelium grows into a cellular plant; the whole structure of a fungus might be called a thallus, save the reproductive organs which are found in or upon it. Such fungi can enter living bodies, either wholly or in spores, in four ways—viz. by means of respiration, deglutition, absorption through the skin or mucous membrane, and by inoculation.

1st. By respiration. Spores flying about in the air are

conveyed to the mouth, nostrils, and lungs, or to any kind of breathing apparatus. Sporules of the *Botrytis brasianæ*, emanating from a dead or unhealthy silkworm, are carried in the air into the breathing pores which open into the tracheal system of another worm, get to the fatty tissue beneath the skin, and developing there, destroy it at a time when the insect is most in want of nutriment. Individuals of a species of Polistes (the representative of our wasp) fly about in the West Indies with plants the length of themselves projecting from some parts of their surfaces, which plants were probably introduced at the breathing pores at their sides. They kill the insects, and in all likelihood flourish better on them dead than living. Again, different species of the genus Sphœria grow in bodies of certain caterpillars in New Zealand, Australia, and China. The insects get full of the fungus, and, when dried, are almost as solid as wood, and present the appearance of twigs with long slender stalks, formed by projections of the fungus. If such be the case here, it is probably so in other cases. For instance, that the spores of *Oidium albicans* are drawn into the nostrils and mouth of human beings, causing aphthæ and diphtheria, and in some cases enter the blood, and getting to the remote mucous membrane, flourish there.

Vegetables which respire in air doubtless receive in the inspired gas the spores which generate disease.

2nd. By deglutition. We know that a young cestoid worm, when swallowed with water by human beings and swine, perforates the stomach, from whence by the blood it is carried to some capillary vessel, the coats of which it gets through, and lodges in muscular, glandular, or brain tissue, where it develops. By analogy, we may argue that the sporules of a parasitic vegetable fungus can act in a similar manner. Man eats wheat, very few grains of which, according to Dr. Marshall, are not infected near their points with one or two fungous sporules entangled in the minute hairs; he swallows fruits, as the pine, on which the *Œcidium cancellatum* is found; he partakes of leguminous vegetables, as the pea, bean, and pulse, and of umbelliferous plants, as the celery and parsley, all of which are liable to attacks of mildew fungus; he eats potatoes and turnips, on which the Botrytis exists; he partakes of fish, on the gills, scales, shells, and other hard portions of which parasitic vegetable fungi appear; he eats mouldy bread, fruits, and cheese,* and of animals infected with fungi.

* The blue mould of cheese (*Aspergillus glaucus*) is considered by epicures to give the cheese an agreeable flavour, and it is probable that it helps the

As regards vegetables, we have reason to believe, from Sée's experiments, that the spores of the Uridineæ are taken up in the roots of the plant, and find their way with the sap to the top, the proper place for their growth.

3rd. By absorption through the skin or mucous membrane. Women in India affected with *Tinea circinata*, caused by the fungus *Tricophyton tonsurans*, have been known to communicate such disease to men.

Devergie, von Barensprung, and others, have proved that parasitic diseases may be transmitted from horses, oxen, and other animals to man; and Dr. Fox relates an instance of a white cat which contracted the mange from *Tinea tonsurans*, with which the children of the family to which it belonged were affected. It may be that vegetables infect other vegetables through their coats, or vegetables communicate spores to animal substances.

4th. By inoculation. Fungi can be conveyed to the blood by inoculation. Kobner by this means, in 1864, caused *Tinea circinata* to appear in his own arm. A vegetable injured on its surface might possibly become affected in this manner by the fungi of vegetables or animals. Inoculation can also be effected through the mucous membrane. The spores having entered living substance, find suitable habitats, and exhibit there the stages of growth or varieties of the species to which they belong; and we name that exhibition a particular disease. The virulence of the latter and the luxuriance of the former will depend on circumstances—temperature, for instance. It has been thought that fungi abound most in cold regions, but I am disposed to think this belief has resulted from want of more perfect observation, at least as regards parasitic vegetable fungi. I have seen more *Tinea circinata* in one commission, whilst serving in H.M.S. *Malabar* in the Red Sea and India, than during over seventeen years I have served elsewhere, and in that ship suffered myself from the complaint. As the ordinary vegetable productions in the Tropics far surpass in size and luxuriance those of colder regions, so it is likely the same is the case with parasitic vegetable fungi. The great heat and moisture, the greater amount (at times) of electricity in the air, the greater loss of alkalies, inducing an acid diathesis—a state generally favorable to parasitic fungous growth—perhaps the greater amount of pigment in coloured persons, and the

digestion of other aliments. Again, a good portion of the stinking rust in flour is supposed not to render it unwholesome, at least when made into fermented bread. The flour is largely used in the manufacture of gingerbread, where the treacle disguises the colour and flavour.

abundance of odoriferous productions in their cutaneous system, together with the general *swerve* from the normal state of health of Europeans residing in warm climates, may all tend to the greater development of parasitic vegetable fungi, and aggravation of the diseases induced by them. Again, a bad or unhealthy state of body is necessary to the development of parasitic vegetable fungi, and the more unhealthy the constitution the more virulent will be the disease. "It is certain," says Dr. Aitken, "that wherever the normal chemical processes of nutrition are impaired, and the incessant changes between solids and fluids slacken, there, if the parts can furnish a proper soil, the cryptogamous parasites will appear; the soil they select is for the most part composed of epithelium or cuticle, and mucus or exudation. Acidity, however, though favorable to their growth, is not indispensable, since some of the vegetable parasites grow upon alkaline or neutral ground, as in ulceration of the trachea, or in fluid of the ventricles of the brain. Certain atmospheric conditions seem favorable to the occurrence of these vegetable parasites; for example, *Tinea tonsurans* may be quite absent for years in places, such as a workhouse, where it commonly exists, and then for several months every second or third child in the place gets the disease."

Amongst plants, an unfavorable season, or forcing, or any unnatural cultivation may, and does, disorder and render unhealthy the wheat plant, rye, pine, and fruits, predisposing them to the action of fungi.

Parasitic Vegetable Fungous Diseases are the result of Fermentation.

It would be more correct perhaps to say that the diseases are a fermentative process at work. Dr. Carpenter says that M. Pasteur has confirmed the belief that all fermentative processes essentially depend upon the development of fungous vegetation in the substance undergoing change. We know that the yeast plant, a parasitic vegetable fungus, excites and accelerates fermentation, and reproduces itself in a fermentable substance, containing some form of albuminous matter in addition to sugar. Now, there is a kind of dyspepsia which results from a debauch, in which the stomach does not discharge all its contents, and in which an acid fluid, owing to some organic change in the viscus, accumulates in great quantities. This, when mixed with food, leads to fermentation, and in the vomited matter appear two kinds of vegetable parasites—viz. the Sarcina (or merismopœdia) ventriculi—a

minute plant of the genus Sarcina or Sarcinula, belonging to the algæ or fungi, and *Torula cerevisiæ;* the former in greater quantities than the latter. Here we have fermentation caused doubtless by the vegetable productions finding a suitable pabulum in which to develop and reproduce themselves. But the most powerful proof that fermentation goes on wherever a parasitic vegetable fungus finds the suitable nidus and nutriment is the following, which at the same time indicates the treatment. The most potent parasiticide known is sulphurous acid, and it is notorious that this acid has the power of checking fermentation. Again, it is well known that the best remedy for that state of stomach in which I have shown that fermentation exists is sulphite of soda—a salt which readily yields sulphurous acid. Now, put these facts together, and I think we need scarcely expect any more to show that parasitic vegetable fungous disease are diseases of fermentation. A like process may go on in plants and fruits, a suitable pabulum being found in which the fungus can cause the fermentative process to be set up.

Rationale of Treatment to be adopted.

In dealing with parasitic vegetable fungous disease we have two things to bear in mind—that there exists an unhealthy or abnormal state of constitution, and that fermentation is going on locally. We have to restore the one, and to check the other. We must find out the cause of the low condition of body, and remove it. If it be bad air, food, or drink, endeavours ought to be made to procure a change to good. If there be dyspepsia, syphilis, or syphilitic taint, we must, if possible, cure it. Any inflammatory action in the skin must be reduced, and tubercular disease treated in the usual manner. The tone of the system must be raised, if possible, to its normal pitch. In this way alone parasitic vegetable fungous diseases may vanish; the tissues being restored to their natural state, the tendency to decay no longer exists, and fermentation ceases because the pabulum in which the fungus flourished is no longer in a decomposable condition. In fact, the plant dies for want of nutriment. In this manner it may be understood how there sometimes occur spontaneous cures of parasitic disease. But while we are endeavouring to restore the system we can be checking the fermentative process going on locally.

It is the custom to denominate medicines that cure the disease, when topically applied, "parasiticides;" but I think

it would be more proper to call them "fermentasists"—arresters of fermentation,—for they may not only act chemically, by killing the fungus, but also by altering the condition of the surrounding pabulum, the consequence of which is the death of the parasite; they may act in one way or in both; whichever it be, fermentation is checked. Some of the parasiticides or fermentasists may be given internally, where they pass by means of the blood to the affected parts, and we can add to and aid their action by local applications. For example, we might administer by the mouth the sulphite or hyposulphite of soda, and apply sulphurous acid locally.

Some of the following medicines have been found useful in parasitic diseases—viz. carbolic acid, acetic or glacial acetic acid, corrosive sublimate, cantharides plaster or vesicating fluid, tincture of iodine, nitrate of silver, red ointment of mercury, and ointment of the iodide of sulphur. These are all used locally, and act either mechanically, by breaking up the skin and thereby destroying the fungus, or chemically, as shown above. Preparations of arsenic have also done good, their action being probably carried on in like manner.

The same treatment might be adopted with the lower animals as with man, and also with vegetables suffering from parasitic vegetable disease. We could easily treat the latter locally, and with little more difficulty constitutionally, by placing the proper remedies around the roots for absorption.

SLAUGHTER-HOUSES OF THE FUTURE.

By T. Orme Duffield, M.D.

The Legislature, in its wisdom, has seen fit to perpetuate in this metropolis the system of slaughtering animals for human food in the private slaughter-houses, some 1700 in number, and this although Mr. Liddle and other metropolitan medical officers of health had pointed out the superior advantages of the public abattoir, as shown, not only by official reports on establishments in Edinburgh, Glasgow, Birkenhead, Cardiff, and other places, but also by the content of the trade with the arrangements made for their convenience. To some it may seem, therefore, that the present time is scarcely convenient for the consideration of the abattoir as compared with the private slaughter-house; but I have felt

so much interest myself in perusing, in the annual report of the Massachusetts State Board of Health for 1874, the document relating to the abattoir established at Brighton (U.S.) for the supply of Boston and its vicinity with butcher's meat, that I have thought a brief *résumé* of it would be acceptable to the readers of the *Sanitary Record*. There is little hope, perhaps, of our obtaining a similar establishment in this metropolis; but as we pride ourselves on our independence of State control, and on the great results attained by private enterprise, it may not be uninteresting to observe that the Brighton Abattoir appears to have originated entirely in the voluntary association of a few men engaged in the trade, and known as the "Butchers' Slaughtering and Melting Association." What has been done in Boston can surely be accomplished for London, and, if not by private enterprise, at any rate by one or other of the great public bodies by which this metropolis is governed—either the Corporation or the Board of Works. They have the power, and now that they have fulfilled their task of making bye-laws for regulating for the present the existing private slaughter-houses, let us hope that they will proceed to the consideration of the far more important question of providing a sufficient number of large, commodious, and accessible public abattoirs that may, in due course, take the place of the multitudinous private establishments of which we have heard so much of late, and so little that is satisfactory in a sanitary point of view. I will only add that, so far as I can judge, many, if not most, of the objections raised to the abattoir appear to be provided against by the regulations which would seem to protect the butcher from all risk of loss by peculation of tallow, &c. But be this as it may, it is quite evident that the Brighton Abattoir works well, and gives satisfaction to its proprietors and to the governing body in the state. It is also largely used, and may be expected in due course to entirely supersede the private slaughtering-places in Boston and its vicinity.

The first point worthy of notice is the greater—what we may call the republican—simplicity of the language of the law relating to the subject. The Act incorporating the Association as a Corporation, by the name of the Butchers' Slaughtering and Melting Association, for the purpose of carrying on the business of buying and slaughtering cattle, sheep, and other animals, and of melting and "rendering" establishments, is comprised in six sections drawn in plain and intelligible language. It authorises the Corporation to obtain not more than 100 acres of land at Brighton, in a

position to be approved as suitable by the State Board of Health, and thereon to erect the necessary buildings or plans, to be previously sanctioned by the Board; the business to be carried on in accordance with such regulations as the Board may furnish or approve, and subject to penalties for any violation. The Corporation are endowed with the privilege of manufacturing and selling any of the usual products of slaughtering and melting businesses; being empowered also to permit other persons to use their premises, or part thereof, on terms agreed. Each member of the Corporation has the right to slaughter on the premises subject to the regulations and to a tariff of prices. The lessees of some of the larger slaughter-houses are prepared to dress beef for other parties; but, by the addition of another block in course of time, it is anticipated that each occupant may be allowed the privilege of doing only his own work. The State Board of Health are authorised (if in their opinion the public health renders the course necessary) to order any person at any time slaughtering within six miles of the Faneuil Hall Market in Boston, to slaughter his cattle at the abattoir after due notice given, and provided the slaughterer shall, after notice, continue to conduct his business in a manner deemed by the Board injurious to health. The Board in this case to fix the terms, either in money or in parts of the animals slaughtered, at which the accommodation shall be granted. A right of appeal, however, is given to any person aggrieved by an order under this section. The capital of the Corporation was fixed at 200,000 dollars in 100 dollar shares; no land, however, to be taken until 100,000 dollars at the least should be subscribed and paid in cash. The Act was passed in the month of June, 1870, and no time appears to have been lost in putting it into force, for already, at the date of the report before us (Dec., 1874), the business had been in full operation for a period of twenty months. Eighteen men or firms commenced work during the first year, a number that was increased to twenty-six during the second year. So far as we can judge, the scheme appears to have been fully successful; large additions to the buildings having become necessary and been completed during the second year of operations at a cost of 80,000 dollars. The new buildings comprise two blocks of dwelling-houses, put up by members of the association, and two blocks of slaughtering-houses, erected on the same plan as the original blocks, but with the improvements suggested by experience. There are now sixteen beef slaughtering-houses, whose full capacity is 450 cattle a day. With these additions the abattoir is adequate to supply

the wants of the great city of Boston and its vicinity, and the work actually done last year was as follows:—53,419 cattle, 12,536 calves, and 303,210 sheep. The heads, feet, blood, and offal of these animals were manufactured at the rendering-house into the several products of oil, grease, bones, hoofs, and fertiliser—all of these products being of the best quality, and finding a ready sale at good prices. Some of the tallow, however, was taken away to small dry-houses in and about Brighton; but the desirability of the rendering being entirely effected at the rendering-house, where, by reason of the devices and appliances, it can be done without offence, is strongly insisted on. Plans are being matured by which the soup from the rendering-house will be utilised. Among the new buildings erected may be mentioned a block of three tripe-houses, with stables; a one-story building, 380 feet long, to be used as a storehouse; and a new elevator, one of the largest and finest in the state, to be used in delivering the products from the rendering-house. There are shops well fitted with drills, lathes, &c., for the repair of machinery, tanks for rendering, driers, presses, and, in fact, every requisite for the several businesses, while the extensive yards have been graded and planked throughout. The drainage is good, and the arrangements for the supply of hot and cold water and steam complete. The slaughter-houses themselves appear to be superior to anything of the sort in this country, and to be provided with all necessary appurtenances, as close pens (lairs), cooling-rooms for the meat, loading-sheds, stables, &c. In the basement of each slaughter-house properly constructed waggons are provided to receive at the several openings in the floor the offal, tallow, heads, feet, blood, tripe, and hides, and remain there till the slaughtering for the day is done, and until the floor is cleared up after killing, when the several parts are conveyed to the places appointed for the reception of them.

The abattoir is placed under a managing director appointed by the board of directors. This official has general charge of the premises, and of the work done on them. He has the control of the assistance and *employés*, and exercises a constant supervision of the rendering-house and the basements of the slaughter-houses; it being his duty, moreover, to see that the rules and regulations of the Corporation and of the State Board of Health are complied with. Every precaution appears to be taken for securing the cleanliness of the premises. No offal or manure is allowed to pass into the sewers; the rendering-house is so managed that none of the gases from the tanks, driers, or condensers is allowed to

escape into the open air or into the sewers; the manure from the lairs and from the intestines of slaughtered animals is speedily and rapidly removed. While killing is in progress the "blood-hole" in the trough is kept open, and the water-hole is closed; but as soon as the slaughtering for the day is finished the water-hole is opened and all other holes are closed, and then the floors and walls of the slaughter-house are thoroughly scraped, washed, and cleaned. The Corporation provide all the necessary hot and cold water for cleaning the meat and the slaughter-house, and also water for the stables and stock-yards. It is especially provided that no injury or unnecessary pain shall be inflicted on any animal, and that an ample supply of food and water shall be served to the animals at seasonable hours.

Only animals in health may be slaughtered; but dead or diseased animals, received in ordinary consignments of live stock to persons slaughtering on the premises, may be prepared for rendering in the basements, and thence immediately transferred to the rendering-tanks and rendered. No parts of animals slaughtered elsewhere may be brought to the abattoir except by special permission of the State Board of Health issued in writing; and under no circumstances may any offal be received excepting only fresh heads and feet. All parts of animals which are to be rendered, dried, or salted on the premises must be so treated without delay, and all hides and skins, tallow or tripe, belonging to any tenant of the Corporation who desired to have them removed from the premises before being rendered, salted, or cured, must be removed at once, and may not in any case remain longer than twelve hours. At the request of the owners the Corporation rendered tallow produced at the abattoir, and all tallow not removed as aforesaid, a proportionate share of the rendered tallow being returned to each party, unless some other disposition is agreed upon. Hides and skins not removed as aforesaid are salted by the Corporation and returned to the owners. For these several processes the Corporation receives such remuneration as the directors may from time to time fix, subject to the approval of the State Board of Health; but the Corporation may buy the crude tallow, hides, skins, tripes, &c. The Corporation renders the hands and feet of animals, paying for each set such price as the directors may fix, subject to the approval of the Board, unless the parties agree upon the price.

Blood, intestines, and other offal, the property of the association, are rendered while fresh, and all scrap and blood dried as soon as possible.

I cannot conclude this brief notice of so interesting and important a subject more fitly than in the words of the president in his annual report to the Secretary of the State Board of Health. "We have laboured," he says, "to make the abattoir in all respects a desirable and economical place for those engaged in slaughtering cattle and sheep and preparing meat for the market. It now only remains for all those interested to avail themselves of the privilege here provided, in order to render the enterprise a complete success, both in a sanitary and financial point of view."—*Sanitary Record.*

PROTECTION OF ANIMALS.

The following address was on Monday, August 2nd, presented to the Illustrious Commendatore, Ubaldino Peruzzi, Syndic of Florence, &c., by the Earl of Harrowby, at Holly Lodge, the residence of Baroness Burdett-Coutts:

We, the President, Vice-Presidents, and members of the Royal Society for the Prevention of Cruelty to Animals, and others approving of the objects for which that society has been formed, offer you a cordial welcome to our country. We rejoice in the opportunity which your visit, as the Chief Magistrate of Florence, at the invitation of the Lord Mayor of London, affords us of addressing you; and we greet you, Sir, as a distinguished member of a benevolent society kindred in all respects to our own—the Società Pottettrice degli Animali—whose recent establishment has been regarded by many as one of the happiest symptoms of the reviving life of free and united Italy. In our opinion, nothing can better honour your noble and beautiful city, the ancient home of learning and of art, than thus to crown the edifice of civilization by extending protection to those humble creatures who are unable to plead for pity or contend for justice on their own behalf. Permit us, Sir, to hope that the work of this admirable society may during your illustrious Syndicate be so far carried out as that cruelty, both of the merely careless and brutal, and also of the more refined and deliberate kind, may be suppressed in Tuscany. And in especial we desire that your attention should be directed to the seemingly inordidate number of animals alleged to be sacrificed daily in a certain laboratory in the supposed interests of science. It has occasioned a very painful sensation in this country to learn from one of your most respectable journals that no less than 14,000 dogs have been, during the last twelve years, submitted to the experiments of the professor presiding over this establishment, whose own treatise

(*Lezioni di Fisiologia Sperimentale*) sufficiently testifies to the grievous and prolonged pain involved in many of his operations. The honorable name of 'scientific research' is, in our judgment, misused when applied to qualify such wholesale infliction of suffering, which we believe is not required for the real progress of science. To the larger number of thoughtful and cultivated persons amongst us, the existence in these days of such a torture-chamber in the midst of your emancipated and glorious city appears an anomally no less strange than melancholy. Most respectfully, Sir, we commend this matter to your kind and serious deliberation, especially requesting you to consider whether undue facilities and encouragement to reckless waste of suffering be not afforded to the vivisector by the police regulations, whereby, as we are informed, eight or more of the stray dogs of the streets are weekly delivered to him free of cost. By such an arrangement the illustrious Municipality of Florence is unfortunately made to appear in some degree to sanction the excesses indicated. The satisfaction wherewith the English press received last year the intelligence that you, Sir, had issued directions that the larger number of the captured dogs, formerly allotted to the physiological laboratory, should be henceforth delivered for speedy and painless destruction to the officers of your society, will sufficiently prove with what pleasure and gratulation the English public would learn that you had proceeded further in the same benevolent course, and had used your high authority to put a final stop to the abuses of vivisection within the limits of your jurisdiction. —*Daily News.*

Analysis of Continental Journals.

By G. Fleming, M.R.C.V.S., Royal Engineers.

CONTAGIOUS PLEURO-PNEUMONIA IN HOLLAND SINCE THE ADOPTION OF GOVERNMENT INSPECTION.

(*Continued from* p. 534.)

From November 3, the articles 1, 3, 4, 5, 6 and 7 were declared applicable to the following communes, or portions of them:

In *South Holland*, to the communes of Bodegraven, Alphen, Hazerswonde, Loosduinen, Ryswijk, Wateringen, and a portion of Noordwijkerwond; November 17, to a portion of the communes of Maasland and Vlaardinger, Ambacht; and December 22, to all the commune of Voorburg.

In *North Holland*, to a portion of the communes of Bloemendaal.

In the province of Utrecht, to a portion of the commune of Soest, Jutphaas, and Lopik; in the latter, the sanitary limits were increased after December 26.

In *Friesland*, to the villages of Tjerkwerd, commune of Wonderadeel, the villages of Wolsum, Folsgare, Nijland, Zjalhuizen, Gastmeer, Oudega, Idsega, Abbega, Offingawier, and Gaw, commune of Wijmbritseradeel, the villages Terzool, Poppingawier, Sijbrandaburen, and the hamlet of Speers, to the villages of Eesterga and Follega in Lemsterland, as well as in the village of Doniaga. At a later period, December 6, to the village of Bezum, as well as to the entire commune of Workum. The experts entrusted with the enumeration of cattle in these localities received special instructions.

The result of these measures could not be appreciated at the termination of the year; nevertheless, after their application, the disease decreased in the two provinces of Holland and that of Utrecht; in Friesland, on the contrary, there was a notable recrudescence. This may have been due to the circumstance, that Friesland breeders were prevented for the moment from sending their contaminated cattle into the Holland provinces. This, however, cannot be affirmed with certainty.

The increase in the number of cases in Friesland compelled the district veterinary surgeon of Prakke to ask for assistance, as it was impossible for him to inspect all the contaminated places. In compliance with this request, the veterinary surgeon of the Swart district went, on January 8, to Sneek, where he was temporarily placed in charge of the south-west of Friesland. The peculiar circumstances attending this measure will be related in another report.

As in the preceding year, the transfer of suspected cattle from stables to the pastures was not allowed, nor from the latter to stables, unless the whole herd had been inoculated. If there was no available virus to inoculate them with at the moment, the transfer was permitted on the written promise of the owner to have the animals inoculated as speedily as possible.

Finally, in order to put an end to bad practices, and to be opportunely informed as to new cases of disease appearing among suspected herds, these were visited regularly every day. This inspection was confided, whenever possible, to people familiar with the symptoms of pleuro-pneumonia. The pas-

tures and stables containing suspected animals which had been transferred with the consent of the burgomaster, after they had been inoculated, were publicly indicated by placards bearing the words "Suspected Cattle." It was forbidden to change depastured cattle without the authority of the head of the commune.

As in the former year also, government received several petitions praying for a modification of the measures for the suppression of contagious pleuro-pneumonia. Nearly all of these came from Friesland, and the majority from Wijmbritserdael, the principal focus of contagion; and those who signed the petitions expressed themselves as adverse to the compulsory inoculation of suspected cattle before these were transferred from the stable to pasture, because they imagined the disease was propagated by inoculation. But this opinion, even though well founded, could not have any weight, as inoculation was only obligatory in the case of suspected animals about to be moved, and which had of course been exposed to contagion. The inoculation of non-contaminated herds was not rendered compulsory by the government. These people also objected to the slaughter of suspected cattle, but were desirous that curative measures should be rendered obligatory. It is needless to say that these demands were not of a kind to be complied with.

Others, again, petitioned for an opposite policy, and begged that the slaughter of all suspected animals should be rigorously carried out. Their demands were no more favorably received.

In South Holland, the government measures were opposed by some of the Burgomasters on the plea that the declarations as to the existence of the malady were not made regularly nor sufficiently early, that this was a cause of its extension, and that this would not be the case if these measures were abolished. Another source of dissatisfaction, was the late arrival of the district veterinary surgeon in many instances, when required to examine suspected or sick cattle. More than once the animal was either dead or convalescent before it was examined. On the other hand, they were desirous that inoculation should be gratuitous, and that compensation should be given by the State when the operation resulted in troublesome or fatal complications. According to these people, the measures in force would not extinguish the epizoöty; consequently, they demanded either better measures or the suspension of occision.

The government could not accede to these requests. Certainly, in its opinion, tardy declarations were an obstacle

to the obtainment of the beneficial results of the prescribed measures; but it was this very fact which determined it to maintain in the strictest manner the system of inspection, and to punish whoever neglected to declare the existence of the malady in compliance with the law. With regard to the delays in the arrival of the district veterinary surgeon—which were never more than three days—when he was required at the same moment in different localities, this could not be regarded as a cause for complaint either by the cattle owners or by the government, so long as the former were anxious to report the disease quickly and to carefully isolate the suspected animals in good time. With regard to the compulsory inoculation of non-suspected cattle, the minister nevertheless had scruples.

The opinion of those who believed that the epizoöty could not be suppressed by the measures in force was seriously combated. Attention was called to the considerable diminution of the scourge since the law of July 20, 1870, was applied, especially in North Holland; the same measures which had brought about such a favorable result there, should have been equally successful in the other provinces; and if the same amount of success had not been obtained in South Holland, this should be a reason for inquiring into the circumstances which had operated in nullifying the means employed, and to hasten their removal.

IMPORTATION OF FOREIGN CATTLE.

On Saturday, Aug. 7th, a large and influential deputation, composed of foreign importers and dealers in cattle, waited upon the Duke of Richmond, at the Privy Council Office, Whitehall, on the subject of the removal of existing regulations affecting foot-and-mouth disease in cattle imported from abroad.

The Right Hon. Russell Gurney, M.P., and Mr. Philip Twells, M.P., accompanied the deputation, the former introducing them. Mr. Irvine (chairman of the Associated Foreign Importers) submitted that foot-and-mouth disease restrictions should be expunged from the existing regulations affecting the importation of foreign animals. Among other reasons, because foot-and-mouth disease was prevalent amongst cattle bred in the United Kingdom some years before foreign animals were allowed to be imported. That restrictions on importation, although rigorously enforced for many years, had proved to be useless, and had considerably in-

creased the price of meat. That it was generally believed to be an epidemic, a passing evil, and beyond control. That reference to the most eminent veterinary authorities would find them almost unanimously of opinion that the existing regulations should be withdrawn. That at present foreign animals were subjected at the place of landing to regulations which were not applied to home-bred animals exposed for sale in any market of the United Kingdom. In the latter case the animals suffering from disease only were required to be slaughtered, while the remainder were allowed to go all over the country; whereas, in the case of foreign animals, if one animal of any class was even slightly affected, the whole of the cargo was ordered to be slaughtered, by which enormous loss was sustained by the importer, and such difference in practice was very detrimental as well as unfair to the foreign trade. He further submitted that there should be liberty of appeal from the decision of the veterinary inspector when he pronounced animals to be suffering from disease, such appeal to be to a member of the Royal College of Veterinary Surgeons, who, with the inspector at the place of landing, should call in an umpire. He further urged that, for the better despatch of business, a veterinary inspector should be appointed to Brown's Wharf, and so save the great loss of time incurred in sending for the present inspector, who was also inspector for the Deptford Market. He pointed out that large numbers of foreign cattle had been prevented coming into the United Kingdom in consequence of the harassments imposed upon foreign stock, and contended that they were as free, if not freer, from disease than animals bred in the United Kingdom. He complained that foreign cattle were burdened with restrictions in the most unfair manner, and pointed out as one of the anomalies of the system that though one foreign animal was found diseased in a cargo at the port of landing, the whole of the living fright was stopped at Deptford, and there slaughtered, whereas, when they were passed as sound and allowed to go into the market, they were placed on the same footing as English and all other breeds, and if any were found infected they were sent for immediate slaughter, whilst the others were allowed to be driven away to different parts of the kingdom as if nothing had happened. Mr. Richard Hall and other gentlemen addressed the meeting.

The Duke of Richmond said he had attentively listened to their remarks upon the subject, which was one of no mean importance, and he would take care to lay their views before his colleagues. The deputation then withdrew.

With reference to this subject the following *ex parte* statement appeared a few days subsequently in the *Standard* :—

Threatened Stoppage of Foreign Cattle Supply.

During the last few days considerable sensation has been created amongst the dealers at the Metropolitan Cattle Market owing to the increasing price of live stock, and the consequent increase in the price of butcher's meat, combined with a serious apprehension that it is in contemplation on the part of the foreign importers to stop the supplies to the English market, owing to the injustice with which they consider they are treated by the orders of the Privy Council. So deeply do the foreign importers of live stock feel their grievance, that at an interview which a deputation from their body—introduced by Mr. Twells, one of the members for the City—had with the Duke of Richmond on Saturday, they gave the President of the Council to understand that unless some of the restrictions imposed with reference to the importation of cattle and sheep were relaxed they would be compelled, by reason of their losses, to withdraw their supplies altogether. It would seem that only a few days previously several large cargoes of sheep had been wholly condemned because in one or two instances animals had been detected with a slight affection of foot-and-mouth disease, and the whole had to be transhipped to the Deptford Market for slaughter, an enormous loss per head thus falling upon the importers. In consequence of this proceeding it was shown that vast supplies from Schleswig-Holstein, Denmark, Holland, Germany, and other Continental grazing grounds, are being withheld, and hence the high price of meat. The foreign importers claim to be put upon the same footing as the importers of stock from Ireland, which is that whilst every animal with the slightest indication of foot or mouth disease should be rigidly condemned, the other animals of the flocks or herds, which are upon examination perfectly sound, should go free into the market. The Duke of Richmond admitted the force of the case presented to him and promised immediate attention to it, but what has taken place since has, so far from tending to allay the dissatisfaction previously expressed, increased it. On Sunday the Leo, a large ship with a cargo of between 700 and 800 fine Dutch sheep, arrived at Brown's Wharf from Rotterdam for the English market, and underwent the most rigid examination by the veterinary surgeons appointed for the purpose by the Privy Council. They were all passed as sound except one, and that the very last one examined. That animal was discovered to have slight disease in one foot. In consequence of this discovery the whole 700 or 800 sheep which had been previously passed as sound had, under the regulations of the Privy Council, to be condemned, and the whole were transhipped to Deptford to be slaughtered at a loss of 5s.

per head to the importers. A still more serious case occurred yesterday. The Florence, also from Rotterdam, arrived in port on Tuesday evening with a cargo of 1500 Dutch sheep and lambs, and although there was but one instance of an animal being found with slight symptoms of disease in one foot the whole cargo has been condemned. During the previous week the Leo, from Denmark, with a cargo of 1500 sheep, had its stock similarly treated, and with regard to cattle, instead of importations of hundreds weekly, they have dwindled down to 20 or 30. Aa soon as the importers and dealers interested in the importation of foreign live stock yesterday became acquainted with these last condemnations they held a conference, and determined upon again going to the President of the Council to inform him that if the relaxation of the restrictions was to be of any effect it must be done at once, as the owners were determined not to continue to give a supply to the English market at a serious loss to themselves. The dealers also contend that unless these restrictions are taken off meat will soon reach a famine price.

Veterinary Jurisprudence.

PAISLEY.

ACTION FOR THE PRICE OF A MARE.

This was an action at the instance of the Argyll and Bute Lunacy Board against Hugh Crawford, horse-dealer, Bruntshields, Kilbarchan, in which the pursuers sue for £88, being the price of a mare which they purchased from the defender. On 10th February Mr. Crole, pursuers' manager, purchased from the defender, at Glasgow Market, a brown mare at the price of £90. Sixteen days afterwards the mare, which was warranted by the defender to be sound and a good worker, was present at a ploughing match, and two hours after beginning work she was discovered to be lame. On being examined by a veterinary surgeon, that gentleman pronounced her to be labouring under a disease called bog-spavin. The pursuers' manager communicated the result of this examination to the defender, who thereupon instructed Principal M'Call, Glasgow, to visit Ardrishaig, and report on the condition of the animal. Principal M'Call said he could find no trace of bog-spavin about the mare, in consequence of which the defender refused to take her back. Hence the present action. Mr. MacRobert acted as agent for the pursuers, and Mr. Reid, Johnstone, for the defender. A large number of witnesses, including several eminent veterinary surgeons, were examined in the case.

Sheriff Cowan, Paisley, before whom the case was laid, issued his interlocutor yesterday, August 3rd. He finds that at the date of sale the mare was unsound from bog-spavin, and, therefore, decerns against the defender in terms of the conclusion of the libel, finding the pursuers entitled to expenses. In a lengthy note attached to the interlocutor, the sheriff points out that, when the mare was examined at the ploughing match for the first time, lameness, which is one of the symptoms of bog-spavin, was noticed. An examination of the mare by the pursuers' manager at the time led to his finding both hocks swollen, which is another symptom of bog-spavin. She was seen on 17th March by Principal M'Call, whose opinion is different, and upon whose evidence the defender must mainly rely. It could not be said that Mr. M'Call was entirely a disinterested witness. He was a good deal mixed up with the case. It was very curious that he had purchased this very mare from the defender just a week before she was sold to the pursuers, and had returned her to the defender within three days. But even if the evidence of Mr. Crole, the pursuers' manager, were put out of view, they had Mr. Mitchell on 8th March, John Smith several times subsequent to 17th March, and Principal Williamson on 31st March, speaking distinctly to lameness at these dates. The veterinary evidence offered for the defender was to a large extent of a speculative character, and the opinions expressed by many of the witnesses examined for the defence appear to the sheriff-substitute to be founded on a doubt existing in their mind as to the fact of swelling and lameness. It was the fair import of the evidence that the disease was masked or latent during the first fortnight she was in the possession of the pursuers, and that it became noticeable first on the 26th February. It was a peculiarity of the disease that rest and quiet did allay and modify the symptoms; in particular, the lameness may entirely disappear.

It is stated that Sheriff Cowan's decision is to be appealed against.—*Glasgow Herald.*

[With reference to this case, we have been requested to publish the following note from the defendant's agent, which we have much pleasure in doing.]

BANK OF SCOTLAND,
JOHNSTONE; 17*th August*, 1875.

To the Editor of the 'Veterinarian,'
CAMDEN TOWN, LONDON.

SIR,

Argyle and Bute District Board of Lunacy *v.* Hugh Crawford, of Burntshields, Renfrewshire.

With reference to the judgment pronounced by Sheriff-Sub-

stitute Cowan, on 3rd inst., in this case, will you permit me to state that the defender has been advised by counsel that that judgment is erroneous, and accordingly by the defender's instructions I have marked an appeal to the Sheriff of the County, which will fall to be discussed within a few weeks.

I am, Sir, your obedient servant,

HILL REID,
Agent for Defender.

DISEASED CATTLE IN DURHAM MARKET PLACE.

YESTERDAY afternoon, a special sitting of the Durham borough magistrates was held, to investigate a charge, under the Contagious Diseases Act, against two persons, named Patrick Riley, cattle dealer, and James Biggins, a drover, both of Darlington, for exposing for sale in the Durham Market Place yesterday, four cows, afflicted with the foot-and-mouth disease. They were further charged with driving the animals along a certain highway, called New Elvet, while suffering from an infectious disease called foot-and-mouth disease. The particulars of the case are as follows:— Yesterday was the usual market day for the sale of cattle, which is held every alternate Monday, in the Market Place at Durham. Between eleven and twelve o'clock, Mr. Farrow, veterinary surgeon, Durham, was passing through the Market Place, and observed a cow suffering from the foot-and-mouth disease, and drew Riley's attention to it. Riley was very abusive to Mr. Farrow, and that gentleman at once proceeded to the police station, and gave information. Directly Mr. Farrow went away, Riley drove the animal to Mr. Thomas Gowland's, the Hare and Hounds Hotel, in New Elvet, and on being traced there by the police, another cow was found in the stable, suffering from the same disease, but in a far worse condition than the first one. Four other cows were also found in the Market Place in the custody of Biggins the drover, and three of them were suffering from the foot-and-mouth disease. All the animals were taken to Mr. Gowland's hotel, and the defendants were apprehended and locked up. Immediately on the facts of this case becoming known to those having animals at the fair, they lost no time in taking their departure for fear of having their cattle contaminated, and in a short time the market was deserted by the cattle dealers without having transacted their business. A witness named Nicholas Bruer, an ostler at Mr. Gowland's hotel, proved that the defendants drove the cows down Elvet. Riley put one of them into the stable and told witness it was on the point of calving. They

then drove the others towards the Market Place. Defendants both pleaded guilty. The Mayor severely censured them, and dwelt on the serious results which their conduct may have caused. Riley was found guilty on both counts, and fined £20 and costs for exposing the animals, and £5 for driving them along the highway, amounting altogether to £27 12s. Biggins was fined £5 including costs for exposing only, the charge of driving being dismissed. Mr. Farrow was complimented by the Bench for the prompt measures he took on the occasion in bringing the defendants to justice. The Market Place was afterwards disinfected, and other steps taken to prevent the disease spreading.—*Newcastle Daily Journal*, August 17th.

NEW VETERINARY COLLEGE, EDINBURGH.

SUMMER SESSION, 1875—PRIZE LIST.

Medals given by the Highland and Agricultural Society of Scotland.

Anatomy.—Mr. Henry Snarry, Malton, Yorkshire.
„ (Certificate of Merit.)—Mr. George Watson, Manchester.

Chemistry.—Mr. James Sandeman, Kirriemuir.
„ (Certificate of Merit.)—Mr. Walter Johnston, Sligo, Ireland.

Materia Medica.—Mr. Henry Snarry.
„ (Certificate of Merit.)—Mr. James M'Bryde, Mochrum, Wigtonshire.

Medal given by Professor Vaughan.

Zoology and Comparative Anatomy.—Mr. James Bell, Leysmill, Arbroath.
„ (Certificate of Merit.)—Mr. Daniel Webster, Carnarvon.

Medal given by Professor Williams.

Best Matriculation Examination.—Mr. George Marshall, Glanton, Alnwick.

ROYAL COLLEGE OF VETERINARY SURGEONS.

By an oversight, the name of Mr. John Cooper was omitted in the report of the Examination of Students from the Royal Veterinary College who passed their "First Examination" on July 7th.

Wm. Hy. Coates, *Secretary.*

August 6th, 1875.

OBITUARY.

We have to report the following deaths:—In the sixtieth year of his age, Mr. Henry Naylor, M.R.C.V.S., of Worksop, Notts. His diploma bears date January 26th, 1837.

Mr. William Simmonds, M.R.C.V.S., Veterinary Inspector, London. His diploma bears date July 22nd, 1840.

MISCELLANEA.

A MAD DOG.

"Great consternation was created at the Herbert Hospital, Woolwich, on the morning of Aug. 5th, by the discovery under a bed in one of the wards of a large brown retriever dog, evidently in a rabid state. Steps were at once taken to remove it, when in passing through the door it came in contact with an artilleryman named Mansbridge, whose foot it seized and bit it through the boot, inflicting a severe injury. Rushing forward, it bit the dog of Corporal Cranham, and further on the horse of Dr. Whale. Thence it darted through the gates of the hospital, up the Shooter's-hill-road, where it bit a pony belonging to Mr. Roberts, flymaster. Again pursuing literally its mad career up the hill, it was seen in passing the police station by Sergeant Preston, and immediately a body of constables, armed with cutlasses and bludgeons, started in hot pursuit, being joined on the way by a number of soldiers. The infuriated animal rushed into the house of a gentleman, named Davidson, a servant in the hall very narrowly escaping, and here a gun was procured and the dog shot by a police-constable, the body being conveyed back to the Shooter's-hill police station and buried in the grounds adjacent. Mansbridge's foot was immediately cauterized, and remedial efforts were made for preventing dangerous consequences to the animals so unfortunately bitten."

THE

VETERINARIAN.

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Communications and Cases.

ROYAL VETERINARY COLLEGE.

OPENING OF THE SESSION 1875-6.—INTRODUCTORY ADDRESS DELIVERED BY PROFESSOR SIMONDS.

Sir Paul Hunter, Bart., in the Chair.

In addressing you on the importance of the science of veterinary medicine and the claims it has upon your time and talents, you will see that I have set myself a somewhat arduous and difficult task. If, then, in my endeavour to perform this task, I should give expression to many commonplace remarks, I must crave your indulgence and ask you to sympathise with me in the difficulty of finding new forms of speech for old ideas.

Old and even most important truths generally require to be repeated a great many times before we fully appreciate them, and yet we are apt to tire of their constant repetition in the same words. On the other hand, there are very few men who are able to dress up old truths in a new and more attractive style, and if you find that I am not one of this number you will, I hope, give me credit for good intentions in repeating what has been so often repeated before in one form or another on similar occasions.

Although, then, the inaugural address common to occasions like the present must necessarily possess similar features, still I may remark that since we were last assembled within these walls to commemorate the return of the period of active duty on the part of the teacher and the pupil, important events have occurred in relation to this Institution

which require special mention, as they may be regarded as constituting a new era in the history of veterinary science.

Except for this I should not have ventured to address you to-day, but have left the delivery of the inaugural address in the hands of my colleagues, any one of whom would have proved his capability of discharging the duty far better than myself.

In bidding welcome to old and respected friends—surgeons, veterinary surgeons and others—whom I have the pleasure of seeing on this occasion, allow me, gentlemen, in your name, and in that of my colleagues and the students of the institution, to thank Sir Paul Hunter for his kindness in taking the chair. We know, sir, how ardent a well-wisher to the cause which has brought us together you are, and we are not unmindful of your unceasing efforts as a Governor of the College, a Member of the General Purposes Committee, and also of the Bye-law Committee, to place the Institution in the proud and enviable position in which she now stands.

Gentlemen, the past history of the College testifies to her continuous and increasing utility as a school of veterinary medicine and hospital for animals. Founded in 1791 by a number of noblemen and gentlemen, she had to create a profession out of very rude materials then at command. Farriers, cow-leeches, shoeing-smiths, and grooms were the embodiment of the veterinary art. To them were necessarily confided the care of animals whose lives were imperilled by disease, for there were none others who were at that time better informed. These men acted on the traditions of their forefathers, and each may be said to have had a reputation, great in proportion as he could look back to a long race of ancestors who had practised the healing art.

Truly, then, may the College be called the *alma mater* of the profession. Ever faithful to the object contemplated by her founders, and jealous of the reputation of those to whom she has given origin, she has perseveringly laboured on. Doubtless her success has varied, and has not always been encouraging, but still she has never been dismayed. Much of her success can be traced to the support she received in early life from the great and the noble of the land, and much of the rapid rise of the profession, as such, to the assistance which was rendered it by such men as John Hunter, Sir Charles Bell, Sir Astley Cooper, Sir Benjamin Brodie, John Abernethy, Henry Cline, Joseph Henry Green, and others—names which will live in the history of medicine to the end of time.

Early in her career royalty acknowledged her value, and

bestowed its patronage on her objects. For upwards of sixty years Royal Princes have honoured her councils by their presence, and three Monarchs in succession have been her patrons.

Her incorporation marks a new era in her history, and places the capital on the pillar of science she had long been engaged in erecting. All her former efforts may be said to have culminated in this one great achievement. Her future course is now rendered clear, and she can act on resolves which she was prevented from doing while passing through the early stages of her advancement.

In an address of this kind it should perhaps be the aim of the lecturer to avoid as much as possible questions of a debatable nature, and especially to eschew professional politics ; but as a matter of history, events, pregnant with good or evil, ought to be recorded, although they may closely trespass upon forbidden ground. I hesitate not to remark that the Charter granted to the profession in 1844 was too limited in its powers to effect much good beyond that which was immediate and direct. The recognition of the veterinary act as a profession, the incorporating the members of the English and Scotch Colleges as veterinary surgeons, the creation of a representative council with a power of examining students as a passport into the body corporate, were good things at the time. Their value would doubtless have been increased and been more effectual for lasting good had the early Executive Councils been more solicitous about the elevation of the profession and the right use of their power, than of giving countenance to measures which tended to produce divisions and to alienate the friends who had assisted them in obtaining the Charter.

The state of things existing at this moment in Scotland, where we witness three rival veterinary schools, is the fruit which successive Councils have reaped from the seed they have sown. Let not my meaning be misunderstood. Let it not be supposed that this institution is envious of competition. No; we know from long experience the advantages arising therefrom. Competition has not been merely our policy, but our practice. By honest rivalry and by continuous improvements this institution has been made what she is to-day. Witness the independent position which she now occupies. Witness what is taking place among her students. Witness also that no public appointments about which she is consulted are made without a competitive examination—educational as well as professional.

We complain rather of the multiplication of veterinary

schools on opposite grounds to those of honest competition. The education of the student is, we believe, less perfect than it would otherwise be, and the prescribed period of study not so strictly enforced, especially in cases where students pass from one school to another, besides which the matriculation examination is far less stringent than desirable. Add but one other to these regretable things, viz., the objectionable system of taking fees by instalments which prevails in Scotland, and it will be seen that this multiplication of schools is a serious impediment to the elevation and advancement of the profession.

We repeat that all this has arisen from the mistaken policy of the representative Council. It had its origin years since, when a second school in Edinburgh was affiliated by the Council in opposition to the one founded by the late Professor Dick. Two conflicting interests were thereby created, whose injurious influence was soon felt throughout the profession. This false step was followed by others of a like kind, affiliation followed upon affiliation, and although the life of some of the adopted ones proved to be of short duration, still we see yet existing, three establishments in Scotland each striving to obtain its full share, or even more, of the sixty or seventy freshmen who enter the schools annually. So much for the practical carrying out of the motto "*Vis Unita Fortior*."

If the yearly numbers of veterinary students could be reckoned by hundreds, as is the case in the medical schools, and if the lives of horses and cattle, when endangered by disease, were *en masse* committed to the restorative power of veterinary medicine, then we should be advocates for the multiplication of veterinary colleges to a proportional extent with those of medicine.

Colleges as colleges, if unendowed, must be self-supporting or they will fall short of imparting a sound education. If all the students were to be found at one of the Scotch colleges it would be none too many to remunerate a proper educational staff; but, as it is, the staff in each is numerically small, and even Scotchmen who are justly extolled for living on little, have even less than little to live upon.

Something has been said about the Council obtaining a supplementary charter, to enable them to bestow honours on members of the profession. This is a matter which requires deep consideration, and to us it does not seem that the time has arrived for such an effort to be made. First, there are existing abuses to be corrected, some of which we have alluded to, and others are no less apparent. We offer no objection to such a charter; but it must be remembered that to a great

extent it is superfluous. The charter of this Institution, as we have on another occasion observed, possesses university powers in the bestowment of professional honours. Members of other schools, teachers and professors of veterinary science here and elsewhere, and persons who have distinguished themselves in the investigations of science, or in the practice of medicine, are eligible for the highest distinctions it can bestow. The mere granting of honours on veterinary surgeons, even if it had been adopted years since, would have effected only a partial good. The foundation of all improvement must be laid deeper down or no safe support will be given to a continually rising superstructure. We must look to students as the source of our chief strength, and encourage their zeal to enable us to secure lasting benefits to the profession. It is just this power which the charter of this Institution has called into existence. From the moment the student enters on the study of his profession, until he passes from off this frail stage of existence, the influence of this power sheds a halo around his brow and stimulates his perseverance amidst all his difficulties and discouragements.

As can be easily understood, the obtainment of the charter has necessarily led to a revision of the rules and regulations of the College. These emendations have been well considered by the Governors; but in order to secure their good working in the future, they have been brought for the present into provisional operation only. This circumstance prevents me from stating what may ultimately be the precise plan adopted for the bestowment of honours on members of the profession and on distinguished foreign professors of veterinary medicine.

The plan, however, as at present sketched is as follows :— That professors and teachers of any veterinary college or school affiliated with the Royal College of Veterinary Surgeons; members of the Court of Examiners, not being veterinary surgeons, and persons who have distinguished themselves by their writings on Animal Physiology or on Veterinary Pathology or Medicine or Surgery; as also veterinary surgeons who occupy or have occupied an elevated position, official or otherwise, shall be eligible for enrolment as Honorary Associates of the College.

That heads of colleges and professors attached to any foreign, continental, or colonial veterinary school, shall be eligible for enrolment as Foreign Associates, under the same arrangements as Honorary Associates.

That any member of the Royal College of Veterinary Surgeons, more especially if a former student of the Royal

Veterinary College, who can give proof of high moral character and professional attainments, and of his being engaged, or having so been, in the active duties of his profession for a period of not less than fifteen years, or that he has been called to occupy a distinguished public position in the profession, shall be eligible for a Fellowship on the nomination of either the President, a Vice-President, or Governor of the College.

That students of the College who acquit themselves in a superior manner at the preliminary examination conducted by the professors shall, on obtaining the diploma of the Royal College of Veterinary Surgeons, be eligible for election as Licentiates. And further that any former student of the College being a member of the Royal College of Veterinary Surgeons, who is engaged in the active duties of his profession in either a private or public capacity, shall likewise be eligible for appointment as a Licentiate, by giving such proof as the Governors may require of his good social position.

And now a word as to the steps which have been taken to prepare students of the College for the ultimate obtainment of these honorary distinctions. First, *a Scholarship of £25 per annum for two years*, to date from the time of entry, will be given to *two* students who shall pass the best competitive matriculation examination; such examination to include classics or the modern languages and the higher branches of arithmetic and physics.

Annual exhibitions—the amount of which has yet to be fixed by the Governors—will be awarded under similar circumstances as those which appertain to the scholarships. These exhibitions will in due time be announced, and I hope to find that they will have for one of their chief objects that of giving encouragement to students to prepare themselves to become future officers of the Institution.

A *Gold Collegiate Medal* will be annually awarded to the student who, at the end of his academical course, shall be selected, upon the report of the Principal and the Professors, as having best deserved the same for general proficiency and good conduct during the entire period of his pupilage.

A *Silver Collegiate Medal* will also be granted to the second best student on the same terms.

Class Prizes will be given by the several Professors in each division of the student's education. They will be distributed to the students in "Class A" on their passing the "First Examination," and to those of "Class B" on their obtaining the "Diploma of the Royal College of Veterinary Surgeons."

The Coleman Prize is henceforth—in accordance with the original wish of the donor—to be confined to pathological and practical subjects "relating to the foot of the horse and the principles and practice of shoeing; the diseases of the eye, and the disease known as glanders."

The Governors will also award a *Silver Medal* and a *Certificate of Merit* to Students who pass the best examination on CATTLE PATHOLOGY; this award, like the others, to have reference to the general good conduct of the successful competitors.

And, lastly, *Certificates of Distinction* will be granted to all students who are reported by the Court of Examiners as having passed a *superior* examination for the DIPLOMA of the Royal College of Veterinary Surgeons.

Such, gentlemen, is a short sketch of the wisely considered plan which the Governors of the College have determined on, to stimulate your exertions, so that when you enter on the practical duties of your profession, you may reflect honour on your *alma mater*, and fame and respect on yourselves.

Comment on a noble scheme of this kind is quite uncalled for. It speaks for itself far more forcibly than anything I could say of its merits. Its good effects must be felt as long as the profession endures, for, acting like a mighty lever, it will continue to raise the science of veterinary medicine higher and higher in public estimation, and thus confer lasting blessings on our fatherland.

Besides these important improvements, others, as you can easily understand, have been found necessary to be effected in the details of your education.

I may here remark that the names of my colleagues are so well known, and individually they are so highly esteemed by the public, as well as by the profession, that it is unnecessary I should speak of them other than as the "educational staff" of the College. Their duties under the new arrangement are somewhat modified as well as extended. Thus—

The Professor of Anatomy will in future also be the instructor of the students in the examination of horses for soundness, as well as in all the ordinary details of veterinary practice, including the performance of surgical operations and shoeing.

The Professor of Chemistry will as heretofore be the lecturer on materia medica and toxicology, and the instructor of the students in practical chemistry and analyses.

The Professor of Physiology will be the lecturer on therapeutics and likewise the demonstrator of practical pharmacy.

The Professor of Botany will be the lecturer on zoology as relating specially to parasites and the lower forms of animal life. He will also be your instructor in parasites and parasitic diseases.

The Professor of Histology and Morbid Anatomy will be the demonstrator of anatomy, and in addition he will assist, as may be required, as instructor of the students in the general practice of the College.

As the Professor of Pathology, it will be my duty to give you instruction on veterinary obstetrics and the principles of surgery, in addition to my lectures on the diseases in general of the horse and other domesticated animals.

And, further, to provide for the proper carrying out of the new scheme for imparting practical information by my colleague, Professor Pritchard, to those students who have passed their "First Examination," the medical care of all the animals in the infirmary will devolve upon me. Clinical instruction will thus be provided for, and a general supervision be exercised over the clinical clerks and dressers. Daily assistance will likewise be afforded by the acting hospital surgeon, on whom for the future will devolve the duty of dispensing all medicine for use in the infirmary.

This change has been rendered necessary by the lamented death of our old and much-respected clerk and dispenser, Mr. Cooke.

Further, with a view to provide for the requirements of the students in the dissecting-room, the Governors have determined on the appointment of an Assistant Demonstrator of Anatomy and Curator of the Museum, who shall give such practical instruction thoughout the day to each student in his dissections as he may require, and shall also keep the preparations in the Museum in perfect order for reference and use in the lecture-room.

Perhaps it is expected that I should here say something with regard to the length of time a student has to be in attendance on the instruction of the College. Two winter sessions and one summer is the *minimum* amount at present fixed on, so that it is possible for a diligent student to obtain his diploma in this comparatively short period. Practically, however, we find that many students do not wish to present themselves for either their "First Examination" or for the Diploma of the College on the lapse of time, and that others are rendered ineligible in consequence of not commencing their studies at the beginning of the first winter session, or it may be by having unfortunately been rejected, so that very few really quit this Institution until after six months' additional

attendance. It has been suggested that a second summer session should be added to the *minimum* length of time. To this, at first sight, there may not appear to be any very serious objection; but the subject will require deep thought before being adopted. I may state distinctly that this Institution is not prepared to take the initiative in the matter. She leaves this to others; but she will give it her full consideration when she believes that the right time has arrived. For the present she has set herself the task of consolidating the extensive changes and improvements already effected by her own unaided exertions.

Let me now pass to a brief consideration of the best means for attaining that for which you as students have come here to obtain. And first I will occupy a few minutes in giving some words of counsel to those whom we have the pleasure of seeing for the first time to-day, as to the various means of acquiring knowledge, and the best way of using these means.

Well, you come here to qualify yourselves for being, in due time, competent veterinary surgeons.

For this purpose you have to acquire a great deal of fresh knowledge from others, and then to add to it by personal observation, by reflection, and by study; in short, to increase your knowledge by honest and by patient work.

"How poor are they that have not patience! What wound did ever heal but by degrees?"

Bear in mind that this word "competent" has, in every profession which, like our own, is progressive, two meanings, two applications. We say that a man is a "competent practitioner" when he is successful in finding out what is the matter with his patients and skilful in applying remedial means which are in his day believed to be most efficient. Such a man is always competent, and he becomes "successful" if, in addition to his *technical* skill, he possesses the power of impressing his employers with a feeling of confidence in his skill. Such a man gets on, and can hardly fail to make a *comfortable* living, even if he does not greatly *improve* his social position. But he need not of necessity go one step further than his contemporaries; he need do nothing to improve the condition in which he found the veterinary art when he first obtained his diploma; he need throw no new light upon the many obscure problems which are being constantly brought before his notice.

We may with equal correctness speak of a man as being a competent veterinary surgeon who, instead of devoting himself primarily and chiefly to the practice of his art, gives up a good deal, maybe all, of his time and ability to working for

the *advance* of his profession. He will do this by making fresh observations, by applying to the purposes of his art new kinds of knowledge, by collecting and working up into an assimilable form for the benefit of the present and future generations the mass of material left by his predecessors in a crude and indigestible form; and, lastly, by helping in one way or another to teach the rising generation.

Such a man as I have last described will often not "get on," *i. e.* he will often die poor, either because he does not sufficiently cultivate or does not possess the power of impressing people with a feeling of confidence in his practical skill. He turns his abilities into another and nobler channel, and is content to leave his reward to the future, doing in reality much more for posterity than the merely "successful" man.

These two kinds of competent men, whose portraits I have thus attempted rudely to sketch, are of course types, extreme forms; but they illustrate the two leading and, in most respects, opposite courses in which the actions of most members of our own and the medical profession also, flow. It is obvious enough that the full development of either form of energy must exclude the other; no one can at the same time work wholly for the present and wholly for the future.

Nevertheless, though most of us are destined to spend the largest and best part of our lives in carrying out the practice of our art in the best way known to us, we may all, or almost all, do something for the advance of our profession either in its scientific, its practical, its social, or its political aspect. It is a matter of great regret that there are so few members of the profession whose zeal for its progress is so great as to sufficiently compensate them for the pecuniary loss which is inseparable from a life given chiefly to exact scientific work.

Bear constantly in mind these two types; on the one hand the successful man who does well to himself, but leaves things much as he found them; on the other, the man who gives himself chiefly to the work of clearing fresh ground for those who come after him.

Remember also that we may all unite the two types of character in ourselves to a greater or less extent, and that however well we may do for ourselves it ought to be our constant endeavour to leave our chosen profession better than we found it.

The imparting of information on scientific subjects by the delivery of lectures has long taken precedence of all other methods of instruction. It is the most inviting, as also the most ready means of impressing the mind with the truths it has to

acquire. Like all other good things, however, the system has its alloy. Too much dependence is often placed upon the teacher by the pupils, who thus become indolent in seeking further knowledge for themselves by reading and investigation. While, therefore, it is the province of the teacher to seize upon the rallying points of his subject, to separate the valuable from the useless; it is no less your duty as students to make the matter your own, and by subsequent research to complete your knowledge respecting it. In this way only can your minds be stored with information, which is hereafter to be applied to your own benefit as well as to the advantage of those to whom you are looking for support.

Nor must you omit to be regular in your attendance at the lectures. An occasional absentee differs but little from one who designedly neglects to be present. He has lost, perhaps, the very thing he was solicitous about; or has missed the practical application of principles he had heard previously expounded.

Another and very great error to be avoided is that of undertaking to decide for yourselves what is important and what is not. Pupils of this class, by studiously avoiding first one thing, and then another, find at last they have made shipwreck of their talents and also of their time.

I shall here venture to supplement these remarks by quoting a passage from the introductory address delivered by my respected colleague, Professor Brown, at the opening of the Session 1872-3. Alluding to the question of an extended curriculum and the additional work for students, he justly remarked—"The question, *cui bono?* indicates an unsatisfactory state of mind. You may depend upon it that your studies are not arranged for the purpose of inflicting on you considerable annoyance. It is only under a deep sense of their absolute necessity that they have been introduced gradually under pressure from without into the curriculum of this and other institutions. There was a time when you might have sat upon these benches, and have gone through the College courses without being troubled in the least about the chemical constitution of bodies, or the botanical relations of various herbs to the conditions of the animal body. But these times are happily passed. It is more satisfactory to know that progressing knowledge from without—the advancing education of the people—has absolutely forced us step by step to make the Collegiate course what it at present is."

Next to an earnest attention to the instructions of your teachers I would place reading. Books are to be regarded as auxiliaries—useful aids which cannot be done with-

out. Read sedulously; but, at the same time, give all thought and attention to what you read, and, if needs be, make notes thereof. Comparatively few think for themselves; and it has been averred that for every ten persons who think, there are ninety who do not. The mind must be allowed to do its part, or all your reading will be in vain. Early reading is perhaps to be preferred, as the intellect is then clear, and consequently more able to receive and retain impressions; but unless you bring a mind free from everything that contaminates it and lessens its power of perception, you will make no advancement by your reading.

Although matter relating to the attainment of professional knowledge must take the lead in your daily study, and this too during the entire period of your pupilage, still you must not narrow your reading to this alone. If such be done your ideas will be circumscribed and contracted, and you will be ill adapted to take your place hereafter among those whose social position is above your own. This should ever be your ambition as members of a learned profession. In all around us we have proofs of mind-progress; its culture, therefore, becomes imperative on the part of the aspirant for technical knowledge. It has been well remarked that "no man liveth to himself, and no man dieth to himself." Each has his sphere of usefulness. Man has a mind to be ennobled by the acquirement of knowledge or debased by ignorance; and in proportion as the former is cultivated, so will the soul—his nobler part—be elevated. An uncultivated mind is like the barren waste, where unheeded spring up thorns and briars, where there are no fruits, nor flowers, nor waving corn to cheer us on our way upwards and onwards. Let each then strive to have it said of him, he is an intelligent and well-informed man, an agreeable and profitable companion, and withal a gentleman.

Let me, in connection with your reading, express a regret at the paucity of good modern text-books, in our language, on some of the subjects especially required of veterinary students. It is much to be regretted that we have no complete set of books in English to which a student can turn with confidence that he will find in them all that he wants and nothing more. In some divisions of your studies there are indeed plenty of books, and to these the remark does not apply; but in the pathological department it may be doubted whether any of the books we possess are equal to the requirements of the time.

Now, how are you to use the lectures best? In view

of the paucity of good books, and bearing in mind the detailed character of most of the lectures, I think that you will do right to take notes at some length of all of them. By "full notes" I do not mean that you should attempt to take down the lecturer's words, for no good purpose is served by that, but you should try to get down all the important facts and opinions which he enunciates on each subject. Probably not many of you will be able to take down well-arranged notes *during* the lecture, in sufficient detail for after purposes; I should therefore advise you to take such notes as best you can, and to write them out at home as soon as possible, and before the freshness of the lecture has passed off. In writing them out you are not to try to produce any given number of pages for each lecture. I repeat do not think of reproducing the lecturer's words, and do not try to write out all the sentences so fully as if you were going to deliver the lecture yourselves; try only to reproduce an orderly arrangement of all the important *matter* which has been brought before you.

Besides taking of notes, do not be afraid to ask questions of your teachers. There is no greater mistake than to remain in ignorance on any particular point for fear of displaying a want of knowledge; teachers always like being questioned, for it shows that interest is taken by the students in their treatment of the subject.

But to proceed. I have now to point out to the freshmen the studies which they will have to pursue in order to fit themselves for their "first examination." These are, Anatomy, Histology, Chemistry—general and practical—Toxicology, Materia Medica, Therapeutics and Botany. A goodly list you will exclaim, but bear in mind that in speaking of the duties of each of the professors, I have shown that ample provision is made for your becoming efficient in all these subjects by exercising only a fair amount of daily industry.

With reference to Anatomy it is impossible to speak too strongly of the importance of this science, and of the necessity which exists for you to devote a considerable portion of your time to its investigation. It is in the dissecting-room alone, with knife and forceps in hand, where such knowledge can be rightly obtained, and the facilities which are afforded in this respect to the veterinary student contrast strongly with the difficulties which beset the progress of the student of human medicine. Our subjects are comparatively of trifling value and easily obtained. They can likewise be brought to the dissecting table with their organism unchanged

by the inroads of disease or death. These privileges are, however, not to be abused.

I am induced to allude to this because great waste often takes place in the dissecting room, and many a subject is removed while yet useful for important purposes. Parts are also sometimes literally cut up, instead of being properly dissected and reserved for further study.

Remember that Anatomy makes you acquainted with the several component parts of the animal body, the relation which they bear to each other, and the harmony which exists in organisation as a whole. No written descriptions, however graphic, nor pictorial illustrations, notwithstanding their value as aids, can supply this knowledge. By dissection alone organisation is made plain. The whole frame is seen to be fitly and aptly put together, everywhere giving evidence of the wisdom and design of that great Creator in whom "we live, and move, and have our being." A practical anatomist as a surgeon possesses an immense advantage; he will never be at a loss on emergencies, and will be enabled to maintain a calm and collected mind during the most critical operations.

We are accustomed in this institution to use the anatomy of the horse as a standard of comparison, and there are many practical advantages arising therefrom. It is nevertheless highly desirable that in dissecting other domesticated animals you should mark how often the horse stands as an exception to the general arrangement of their organization. Take for example the terminal portion of their extremities as simulating those of man; mark their near relationship, and mark also, when compared with the limbs of the horse, how much they differ.

We often speak of anatomy as *descriptive* when it treats of the form, shape, &c., of the different organs, and the relation they hold to each other; and as *general* when recognising the structure and physical nature of the tissues composing the organs. The latter, however, is now better known as physiological anatomy or histology.

The divisions thus alluded to, have reference to the animal body when in health; but as, by disease, changes are wrought both in the form, composition, and physical condition of many of the organs, so another division of anatomy is rightly spoken of as morbid or pathological. I may here state that for the more effectual inculcation of a knowledge of Histology and Morbid Anatomy, the Governors have created a Professorship of these sciences, which has been conferred on Mr. Axe.

From what has been previously stated, it is evident that no advance can be made in morbid anatomy until

histology is thoroughly understood, for you must necessarily fail to recognise a change in a part if you are unacquainted with its normal condition. A knowledge of anatomy, then, lies at the basis of advancement in the healing art, and it is this knowledge which marks the difference between the man of science and the charlatan. One is master of numberless details relating to his profession, which the other is entirely ignorant of. One is guided by precise and fixed laws, while the proceedings of the other are as erratic as a wandering star.

It was rightly stated by Professor Cleland, the president of the section of Anatomy and Physiology, at the recent meeting of the British Association at Bristol, "that anatomy was no mere collection of disconnected facts, no mere handmaid of the physician and surgeon, or even of the physiologist. It was destined, as dealing with the most complex sequences of phenomena, to take the highest place amongst the sciences as a guide to philosophy. Every one must have noticed the increased importance now given to natural history studies as a part of education, and it was worth while to note that it was most of all in anatomy and physiology that the close connections of matter with mind were brought under review, physiology exhibiting the relations of our own mental being to our bodies, and anatomy revealing a body of organized nature whose organisation points to a source of beauty and order beyond."

From these eloquently expressed remarks you will not fail to see that even the external conformation of animals is closely allied to anatomy, and that among other things it is indicative of their capabilities or otherwise to undergo exertion, withstand the ordinary causes of disease, or quickly accumulate flesh and fat from relatively a small quantity of food.

The most profound anatomist, however, as such, would know but little of the uses of the several component parts of the body. The structure of the liver does not reveal that its office is to form bile, nor that of the kidneys to eliminate urea from the system. The science which unveils these functions of animal life is physiology, and this therefore constitutes another and most important division of your studies.

Physiology has to do with a *living organism*, and to a great extent it must therefore be learned from the writings of the best authors, conjoined with the expositions of your teacher. It is, perhaps, the most inviting of all sciences; for, while some of its laws are fixed and certain and easy of comprehension, others allow of the greatest range of the human intellect for their solution.

So much of what we may be permitted to call commonplace physiology, it is right that even freshmen should become acquainted with; but abstruse points of the science must be left for those who have entered on the second division of their studies. All freshmen should early know that it is the office of the stomach to digest the food—of the liver to secrete bile—of the heart and vessels to circulate the blood—of the lungs to support the breathing—and, indeed, be familiar with the ordinary functions of every portion of the frame; but the way in which these several offices are performed, and the part that life takes in their production must be left for advanced students.

I come next to chemistry, over which Professor Tuson presides. This science is indeed one of the greatest importance to you, unfolding as it does many physiological phenomena. It has has been the custom to speak of organic chemistry as a special branch of this science, from its application to the purpose alluded to. Doubtless its value in this respect will appear yet more and more; but some, we fear, in their search after knowledge, are too apt to lose sight of the operations of the vital force as a controller of chemical action. "It is a great thing," writes a distinguished member of the medical profession, "to be able, by the aid of organic chemistry, to trace each act of the metamorphoses which the materials of the body are continually passing through; to be able precisely to define what becomes of the saccharine and fatty principles of the food; to be able to follow the albuminoid matters, the phosphorus, the earthy, alkaline, and metallic salts; to have a clear perception to what particular class of organs they go; how they are used up in the production of different kinds of force, or in the formation of various secretions; and, finally, to find in the very *débris* and excreta of the body the sure and certain measure of the vital action itself."

Nothing has done so much for the modern veterinary surgeon as his knowledge of chemistry. Without it he would be ignorant of many of the functions of the body in health—of the changes wrought by disease—of the means to satisfy himself that death arose from natural causes—of the composition and properties of the agents he employed; in fine, deprived of this knowledge, he could not be considered either a safe or good pathologist.

Chemistry will of necessity make a great demand on your time; but this, if rightly economised, need not to interfere with your other duties.

Connected with chemistry, as collateral branches, are materia medica and therapeutics—sciences which treat of

the agents and the manner of employing them in combating disease: these in due course must also have their proper share of your attention.

With reference to therapeutics and their bearing on pathology, it is necessary to observe that it is to the principles of treating disease that your attention has to be given, not to the mere exhibition of medicines. Therapeutic agents used without judgment often augment the very affection they are intended to relieve. Earnestly apply yourselves to the *science* of medicine, and then you will never be at a loss as to what to do, or what to give. Science must, however, be conjoined with practice, and as practical anatomy cannot be learned except by the use of the knife and forceps, nor histology except by the employment of the lens, the microscope, and the teasing-needles, no more can chemistry be acquired except by the use of the crucible, the retort, and the spirit-lamp; nor pharmacy except by the pestle and mortar, the balance, and the measure.

Upon such foundations as anatomy, physiology, chemistry, therapeutics, and botany, the top stone of the building, pathology, has to be erected. The principles of this important part of medical science will be taught you in the lecture-room, but the application of these has to be acquired in the infirmary. While here, you will but begin that system of observation and reflection upon the ever-varying phenomena of abnormal action present in the several stages, types, and forms of disease, which time and experience will have to perfect. Indeed, to excel in "the art of treating disease," you must continue *students* to the close of your professional career.

In studying pathology you must note the phenomena that the functions of the body present when diverted from their usual course by the intervention of disturbing causes, and examine the alterations of structure which accompany such deviations. In relation to these disturbing causes you must bear in mind that some are special, others common; some transient, others persistent. Among the latter never lose sight of the ill effects which attend on the existence of parasites. Many of the most serious diseases affecting the lower animals depend exclusively on this cause. Parasitic diseases—thanks to the Governors of the College—now form a special portion of the curriculum, and you can boast of having one of the most able helminthologists, Dr. Cobbold, to guide you in your studies. The structure of parasites as well as the provisions for their reproduction are a most important element in pathological knowledge, which, like morbid anatomy, can only be

arrived at by the use of dissecting needles, the lens, and the microscope.

With regard to pathology in general, an eminent surgeon writes thus:—

"Without a scientific knowledge of the principles and laws which preside over the natural operations of the living body, you cannot be said to understand, even vaguely, the nature of the derangements of disease; and without a scientific insight into morbid conditions it will be impossible to adapt your treatment skilfully to the varieties which they manifest, or to be other than the slaves of empirical rules, blindly applying the same remedies under circumstances wholly different, and constantly at a loss when new phenomena unexpectedly present themselves."

I repeat that your success in after life will mainly depend on the beneficial results which attend your skill in the treatment of disease. Of all the means to acquire a knowledge of the treatment of disease none can compare to hospital practice. You must be strict, then, in your attendance to this, both in the yard and stables of the institution, where you will see daily brought into operation those principles which have been inculcated by your teachers.

You will have to add to your knowledge of disease by *observation and thought*. Cultivate your powers of observation in every possible way, and on every occasion, for by it you will add not only valuable matter to that already possessed, but will lay the foundation for accurate and sound judgment of the value of symptoms as indicating variations in the progress of disease. When I advise you to cultivate your observation, I do not mean that you are to train your sense of sight only, but that you are to extend the meaning of the word, and employ *all* the senses—sight, hearing, touch, taste, smell. Use then your eyes, fingers, and ears, on all suitable occasions. Compare the various sensations with each other, *e. g.* compare the appearance of a swelling with its hardness, heat, and size, as appreciated by the fingers; compare the appearance of a fistula leading to diseased bone with the sensation produced by touching the bare bone with a probe; and compare both these sensations with the characteristic odour of diseased bone which you will recognise in the discharge. Judge of the value of each appearance by comparing it with similar or dissimilar appearances; and especially in estimating the value of symptoms of disease, compare one part of the animal's body with the other, and compare the internal temperature, as ascertained by the thermometer, of one individual with another, for unless you do this, you will

constantly be liable to over-estimate the importance of some trivial sign, or to overlook one which it is of the utmost consequence that you should recognise.

Observe and *compare*, then.

Comparison implies the exercise of the power of reflection. You must bear in mind that *mere* observation will not help you beyond the case with which you are dealing; it is only by constantly thinking about what we know and what we observe, constantly going over the old ground again, and comparing one case of it with another—it is only thus that we can make the best use of our knowledge and of our observing powers.

Next to the daily watching of cases of disease, noting the progress, change, or alleviation of the symptoms, nothing will tend so much to the advancement of your knowledge of pathology as the making of *post-mortem* examinations. Pathological anatomy unveils things which had been shrouded in mystery, and brings to light that which had been only obscurely discerned. As veterinary surgeons, we here stand on vantage-ground. Few objections are ever made to our *post-mortem* examinations; indeed they are not infrequently insisted upon as tests of the value of our diagnosis.

The knowledge thus gained is indelibly fixed upon the mind; and the more it is reflected upon in relation to the symptoms of disease, the more valuable it becomes. As a future guide, it is of the utmost worth; for it will guard you against the temptation of expressing too freely an opinion at first sight of the nature of a disease. *Post-mortem* examinations are by some veterinary surgeons too much neglected, being instituted only in rare and unusual cases. This is an error akin to that of disregarding the information which is to be obtained from the more common forms of disease. "Every case will yield instruction—this one for its rarity, and that for its frequency."

The object, gentlemen, of your teachers in the several divisions of your studies will be to impart information in a plain, simple, and practical manner. Each will aim at being the tutor, rather than the professor. Pure *ex cathedrâ* teaching has had its day. It now yields to practical instruction, as being best suited to meet the requirements of the times. Students need to *see* things as well as to *hear* of them, in order to make sure and certain progress. But although this is so, care has to be taken that practical teaching is not abused; it has its limits and ought not be carried into the every-day lessons on physiology.

The present outcry against vivisection has had it

origin, we fear, in an abuse of physiological demonstrations. We abhor the man who is guilty of cruelty towards the inferior animals; and he who would unnecessarily torture them even in the ends of science is only worthy of contempt. At the same time we believe that public opinion has been unduly excited on this question, and that unless restrained it is likely to lead to the adoption of measures which are sure to fail through their stringency. Physiologists have still to solve some problems of life and organisation for the benefit of the living and the diseased, and if the legislature can step in and provide that investigations shall be undertaken only by experts and on narcotized animals, public opinion ought to be satisfied.

In this institution experimental physiological teaching has never been encouraged, although it has doubtless witnessed many experiments which have been undertaken to settle important points connected both with physiology and pathology, even from the time when John Hunter was the guiding star of its medical committee onwards to the present. But we repeat, that its pathway has not been stained by the blood of animals unnecessarily sacrificed for practical expositions. Its students have become eminent without such a help as this.

We hold also that these experiments are not absolutely required in medical or veterinary institutions. If schools existed for the exclusive study of physiology, a warrant for daily experimental teaching might, under prescribed regulations, be possibly found; but the establishment and constitution of medical schools have a far different object. Students throng their wards for the purpose of obtaining a general knowledge of the science and practice of medicine and surgery, and perhaps scarcely one in a thousand enters on his studies for the purpose of giving especial attention to experimental demonstrations with a view of ultimately becoming a physiologist, *per se*. Are, then, we may ask, experiments on narcotized animals to be oft repeated that all may *see*, when the smallest possible proportion only are specially instructed thereby? Are we to risk the blunting of the finer feelings of human nature in hundreds of young men for the advantage of the twos and threes? No! emphatically no. Ever bear in mind, gentlemen, that the study of the ordinary functions of the living body, and also of the nature of disease—ordinary as well as special—with an analysis of symptoms, and searching *post-mortem* examinations, in relation to the progress of fatal cases of disease, will, with the expositions of such a teacher as you possess, make you really good and practical physiologists.

The dignity of your profession requires that its members should possess a high degree of humanity and a fondness for animals, as well as a high estimation of their value, as God's gifts to man. In your mind every animal should possess a value far beyond its market or even its fictitious price, although this might be reckoned by thousands. You are to look upon animals as living organisms, whose physical powers are in many respects far greater than our own, and whose life is governed by the same natural laws as those which govern ours, ever bearing in mind that a violation of these laws will be attended with pain and suffering and death. The maladies of the cat or the dog or the pig, as domesticated animals, are to be investigated with as much zeal for a knowledge of their true nature and causes as those of the horse or the ox. Unless you regard your profession from a standpoint like this, and come to look upon the meanest of the inferior creatures, as they are sometimes but improperly called, when suffering from disease, as creatures appealing to you for assistance; and unless your chief desire is to step in between disease and death, and stay the hand of the destroyer, you will be unworthy of the name of veterinary surgeon.

Speak not of the least valuable of the animals which man has subjected to his wants and requirements with contempt. If it be not your mission to minister to the sufferings of man, remember that you still have a mission, which will enable you to say—

> "I have unlearned contempt. It is the sin
> That is engendered earliest in the soul,
> And doth beset it like a poisoned worm,
> Feeding on all its beauty.
> * * * *
> "God has made nothing worthy of contempt;
> The smallest pebble in the well of truth
> Has its peculiar meaning, and will stand
> When man's best monuments have passed away."

Nor must you be content even with this; for the laws of animal life and the nature of disease are to be studied by you, not only for the purpose of alleviating suffering, but for the purpose of preventing it. Causes of disease are to be investigated with the object of their removal, as well as symptoms with a view to their relief. We rejoice to see that this high and noble principle is recognised in the motto which has been selected by the Governors of the College under the Charter of Incorporation, "*Venienti Occurrite Morbo*"—"Meet the coming disease;" do not allow it to take root; it may then defy all attempts at cure. Veterinary surgery, we

believe, has fully recognised this principle as her essential duty, and we cannot doubt that she will reap the fruits thereof.

Did time permit, much could be said on a point like this; but I must hasten on, and offer some more homely advice to you, as students, for your guidance.

Having determined what is right, set yourselves honestly to work, and go boldly forwards. Love your profession for its own sake, or you will neither honour it in the eyes of the world nor succeed in it yourselves. Bear in mind that in whatever position a man may be placed, success will not await him unless he takes a pleasure in performing the daily duties of his calling.

The fervent spirit is always a healthy and happy spirit, working cheerfully itself and stimulating others to work. It confers a dignity on even the most ordinary occupations.

"To business that we love we rise betimes and go to with delight."

Avoid, however, all self-sufficiency; this is invariably a barrier to all further acquirement of knowledge; a vessel that is full can hold no more. No man has ever reached, or ever will reach, the pinnacle of human knowledge. There is a height beyond all his powers of thought—"a path the vulture's eye has not seen"—some truth not yet explored, and many problems not yet solved.

Be diligent. It is the diligent pupil who, early and late, is to be found in his place, and who plods on day by day, determined to gain the object he has come to seek—that of being a graduated member of the profession—who will be sure to succeed. Let me, then, entreat you to persevere, to impose activity upon yourselves as a positive rule and duty, to be punctual and regular in your attendance, and to allow nothing to induce you to give up even a single day to what has been called pleasurable recreation.

> "Time *was*, is past; thou canst not it recall;
> Time *is*, thou hast; employ the portion small;
> Time *future*, is not; and may never be;
> Time *present* is the only time for thee."

Every student should remember that according to his industry, so will be his reward—as he sows, so shall he reap.

A plain and out spoken writer of the early part of the present century, who rose fron the humblest ranks of society to be a member of the British legislature, has thus expressed himself on continued perseverance:—"Our minds are not

always in the same state; they have not at all times the same elasticity; to-day we are full of life on the very same grounds which to-morrow afford us no hope at all. Every human being is liable to those flows and ebbs of the mind; but if reason interfere, and bid you *overcome the fits of lassitude*, and almost mechanically to go on without the stimulus of hope, the buoyant fit speedily returns; you congratulate yourself that you did not yield to the temptation to abandon your pursuit, and you proceed with more vigour than ever. Five or six triumphs over temptation to indolence or despair lay the foundation of certain success, and, what is of still more importance, fix in you the *habit of perseverance*."

Smiles, also, in his excellent work, 'Self Help,' thus writes:—"What Dr. Arnold said of boys is equally true of men—that the difference between one boy and another consists not so much in talent as in energy. Given perseverance, and energy soon becomes habitual. Provided the dunce has persistency and application, he will inevitably head the cleverer fellow without those qualities. Slow, but sure, wins the race. It is perseverance which explains how the position of boys at school is so often reversed in real life; and it is curious to note how some who were then so clever have since become so commonplace, whilst others, dull boys, of whom nothing was expected, slow in their faculties, but sure in their pace, have assumed the position of leaders of men."

Avoid improper companions, and not only so, but seek good ones, and even in your dress and manners strive to be none other than gentlemen. I fear that the evil still exists among many young men so to attire themselves that they may be supposed to have horse knowledge. As veterinary surgeons you must be horsemen; but not imitators of sporting men or jockeys.

Throughout your whole career be distinguished for abstemiousness; dissipation and intemperance are two of the great curses of society. Those that habitually indulge in them degrade themselves in the estimation of all rightly constituted men, and sink themselves below the level of the beasts that perish. Supply the requirements of nature; enjoy life and its pleasure, but never abuse her best and choicest gifts. The dissipated and intemperate soon lose the confidence of those with whom they have to deal. Alas! "in how many instances have we seen most amiable and even industrious families brought to ruin by nothing else but this. Self-interest is no respecter of persons; it asks not who knows best what ought to be done, but who is most likely to do it; we may often admire the talents even

of dissipated men, but we do not trust them with the care of our interests."

Wherever, then, you may be or whatever you may be called upon to do, never lose sight of the admonitions of a father, and ever remember the advice of a loving mother.

"It is an easy matter," said the *Lancet*, in an able review of the opening of the medical schools, a year or two since, "to give good counsel, and perhaps here and there it may alter a man's course of life; but, as a general rule, the career of a student depends much more on the effect that home influences have exerted on his mind, upon his own disposition to evil or to good, and on the friendships he forms. Few young men, however strongly they may be tempted, will suddenly throw off the rule of their previous life; but many may have their sense of duty sapped, and be slowly led astray by the constant and seductive influences of those by whom they are surrounded. Many instances have unhappily come under our notice where high abilities, excellent prospects, and a generous disposition, have all been made shipwreck of by the selection of unprincipled friends. The billiard-room and cards, cigars and strong drink, have been the first steps to ruin of not a few with whom we once associated on equal terms, and who are now either dead—killed by their own vices and follies—or are the veriest outcasts on the face of the earth, broken in fortune, in health, and in reputation."

Gentlemen, I pray this may not be the case with any of you. Possessing *two* out of the *three* I's, industry and intelligence, success not only can, but will be obtained. Add to these the third *I*—Integrity—and honour and prosperity are yours.

One word with regard to the examinations. I beg of you not to fall into the error into which so many students, not of our profession only, but of all others, do fall; the error of making the examination for a diploma or degree the highest object of their ambition, which, when they have obtained it, will set them free as thenceforth complete in their knowledge. Examinations are *a means to an end*, but are not themselves the end at which you ought to aim. Do not fix your whole attention on the examination for the diploma. Think more of acquiring the knowledge and skill which will do you good service in your future practice, and which will help you to advance the profession of which you hope to be members.

It may, perhaps, be some help to you in this matter, if you try to get rid of an idea which infests all colleges of which I

have any knowledge, viz. that examiners delight in making candidates miserable, that their pleasure consists in trying to trip up and pluck unhappy students who are handed over to their tender mercies. Perhaps it is trivial to allude thus seriously to what is after all pure fiction; but I assure you that many students into whose confidence I have been taken, have assured me that many candidates for examination work themselves up into a miserable state of excitement about what questions are likely to be asked, and especially about the reputed good- and ill-nature of such and such an examiner. Why, gentlemen, if the benevolent members of the Court of Examiners had any idea of the needless terror that their names so often implanted in the breasts of so many proficient candidates they would be the first to give assurance that they always have the best possible intentions towards every candidate, and that they are only too delighted to pass any man who shows a moderate amount of knowledge and ability. They know well enough that scarcely any examination, hardly even the fullest and most carefully conducted, can always enable them to say positively that such a man is incompetent to enter the profession; and they are always willing, whenever possible, to give the candidate the benefit of the doubt.

Get rid, then, at once of this morbid dread of the examinations; make ready for them, as you do for all other trials of ability, by suitable preparation, and rest assured that no man who works steadily and carefully during his pupilage has anything to be afraid of with regard to his examinations either by his Teachers or by the Court of the Royal College of Veterinary Surgeons.

And now let me glance for a moment or two at some of the duties which will devolve upon you as veterinary surgeons when you enter into the serious business of maintaining yourselves and working for the profession, and for the interests of the school at which you had been educated.

I need not, I am sure, say more than a very few words on the duty we owe to the public, to the profession, and to ourselves, of maintaining and increasing our efficiency as practitioners of the veterinary art. It is a very old truth, but one that we are all extremely liable to forget, that we are all students. Every man remains a student so long as he studies to learn new things, and what practitioner is there who does not constantly find new matter for profitable work and thought?

Notwithstanding this palpable fact, it is nevertheless true

that there are many men who at an early age shut up their minds to new impressions; whose minds get into a narrow groove, in which they continue to run to the end of their lives, and into which groove all fresh matter must of necessity be brought. These men are not idle; on the contrary, many of them are very hard-working and diligent. Their fault is not want of strength, want of intensity of purpose, for they are often hard-working men, of great strength of will. They require rather breadth of view, a power to see things in a new light. Against this vice of mental narrowness all of us have to strive constantly and energetically. It requires such an effort to keep the mind open to new ideas, to preserve it in a state fit to judge of each fact and opinion on its own merits and without reference to other preconceived ideas and opinions, that we have all to keep watch over ourselves continually, lest we fall into too personal and narrow a method of dealing with new matter.

Let us now consider, as fully as time allows, some of the directions in which we of the present generation should especially try to strike out new paths. Some of these new paths lie entirely within the boundaries of our own profession; some, on the other hand, ramify in various directions on ground already to some extent occupied by workers in other departments of science and art.

Let us take, as an illustration of one of the latter class, the vast subject of comparative pathology; and let us endeavour, so far as we can in a cursory examination like the present, to appreciate the importance of ourselves (each one of us in his degree) contributing to increase the common stock of information on this subject.

You, doubtless, know that for a good many years past a great deal of attention has been paid by scientific men to comparative anatomy, and to a scarcely less extent to comparative physiology. An enormous amount of accurate information has been gradually collected with reference to the normal structure and the classification of the different members of the animal kingdom. There are still a not inconsiderable number of men devoting their whole time and energies to this work. Large and most valuable museums of comparative anatomy have been formed, one of the finest being that of the Royal College of Surgeons of England. It is well that all this work should have been done. It is quite right that we should know all that can be known about the structure and uses of the different organs of all animals, and about the natural relationships existing between the different kinds of animals. But with all deference to the very

distinguished men of past and present times who have worked and are now working under the banner of comparative anatomy and physiology, I would ask whether results at least as great, if not much greater, might not by this time have been obtained if for the last thirty or forty years the various diseased conditions of different species of animals had been systematically studied side by side with those of man? See where we should have been if such a plan had been carried out. We should have known perhaps somewhat less of comparative anatomy, but by this time we should have had something like a natural and complete classification of the diseases of many of the lower animals as well as those of man, and even also of plants; and who can say what important results in the prevention and cure of diseases both in man and the lower animals would not have followed such a wide and exact knowledge of their mutual relationships?

See what we have instead!

We have a most elaborate knowledge, possessed by a few men, of almost innumerable details of comparative anatomy; a veterinary profession which knows nothing, with a few exceptions, about diseases of the human subject and their bearing on the diseases of animals; a profession of human medicine ignorant, with a few exceptions, of all that concerns the diseases of the lower animals, and of the relations which these diseases bear to those of the human subject; we have the two medical professions, human and veterinary, working in parallel lines, but neither bringing any considerable help to the other.

It is with the hope of stirring up some among you to an appreciation of the importance of this subject that I have ventured to touch upon it here; and I am the more inclined to give expression to my opinion on the present occasion that there may be no possibility of a misconception, on the part of the sister profession with regard to our view of the matter.

It is always best, if possible, to illustrate a general question by examples, when we wish to make the whole subject attractive and engaging. The difficulty in the present case is to find one example which is better than another, for whichever way we turn we find that much light is thrown on the causes, nature, and treatment of disease by comparing corresponding maladies in different species of the lower animals with those of man.

Not to do more than mention such well-known instances as glanders, rabies, scrofula, typhoid fever, and the various and malignant blood diseases, and the parasitic affections common to the lower animals and man, we have not far to seek for

further ground which will richly repay cultivation. Thus we may investigate the effects of the varying conditions and character of food, temperature, moisture, altitude, &c., on the prevention or production of diseases of different organs, such as those of the joints, respiratory organs, organs of digestion, &c., in the lower animals, as compared with the effects of the same causes on the human subject. Then the whole question of the hereditary character of diseases, including those that are infectious and contagious, is a subject of vast importance to those who have to do with animals as well as with man, and much light may be shed on each by comparison with the other. Again, the whole category of diseases of special parts, such as those of the skin, requires to be gone over again by the light of the modern knowledge of these subjects in man.

There is, however, still nothing like a society of comparative pathology, nor is there any publication devoted specially to the subject. Although such special facilities for the cultivation of comparative pathology are wanting, yet I feel sure that many veterinary surgeons might do good work in this direction if they would co-operate with the medical practitioners of their respective districts; and I am equally sure that many medical practitioners would be very glad to enlighten themselves by free communication with the veterinary surgeons of their neighbourhood. There is, I should think, no good reason why some plan should not be started for allowing members of the various veterinary medical associations to become members of the local medical societies, and *vice versâ*. By the active co-operation of an intelligent veterinary surgeon and a good human surgeon such questions as the existence of malarious fevers, rheumatism, &c., in the animals and men of the same district, might be settled, and the prevalence and mutual influence of epidemics in animals and men could be ascertained. It seems to me that, for the present, some such co-operation is the only means we have for effecting these grand objects; alike important to practitioners of human and veterinary medicine and surgery and to the community at large.

Gentlemen, in bringing this perhaps too long address to a close, one thing especially forces itself on my mind, *namely*, that ere we meet again to commemorate the opening of another Session, some among us will have passed away, and others will occupy the niche we now fill. Let each, then, determine for himself that, as days wing their flight, and drop into the bosom of eternity, they shall carry with them a record of good resolves taken and good deeds done.

Let us be honest, faithful, diligent, truthful and sincere; above all things let us be reverent and devout, looking unto Him for a blessing who made heaven and earth and hath all things under His government.

[We regret to be obliged to defer the further report of the opening of the session until our next number.]

ON THE DESTRUCTION OF ELEPHANTS BY PARASITES; WITH REMARKS ON TWO NEW SPECIES OF ENTOZOA AND ON THE SO-CALLED EARTH-EATING HABITS OF ELEPHANTS AND HORSES IN INDIA.

By T. Spencer Cobbold, M.D., F.R.S., F.L.S., Professor in the Royal Veterinary College.

At the Norwich Meeting of the British Association for the Advancement of Science in 1868 I exhibited two flukes which had been received from Veterinary Surgeon J. S. Thacker, of the Madras Army. They were handed to me by the late Dr. Baird, of the British Museum, having been kindly forwarded from India by Dr. Hugh Cleghorn, at Mr. Thacker's request. The parasites were labelled "Distoma taken from liver of elephant and forwarded for classification." I believed at the time that these entozoa were identical with flukes that had been some years previously obtained from the duodenum and biliary ducts of an Indian elephant, and which, though carefully preserved in the Boston Museum, U. S., had never been properly described. As verbally stated to the Association, the parasites were only briefly noticed by Dr. Jackson in his descriptive catalogue of the museum. Some two or three months previous to the time of which I speak fifteen specimens of fluke removed from Burmese elephants had been forwarded to and received by Professor Huxley from Rangoon, accompanied by a statement to the effect that they were the cause of an extensive and fatal disease in Burmah. Through the kindness of Prof. Huxley I was allowed to make use of his specimens for the purpose of comparison and identification, and thus it became evident that our specimens were identical. It was also tolerably certain that the species could be none other than that represented by the Boston specimens. Further examination having made it clear that the organisation of these flukes departed from the ordinary distome type, I named the parasite *Fasciola Jacksoni*, at the same time

offering, as far as I could, a suitable description and figure of the species (*Entozoa*, Supp., 1869, p. 80). Now, if reference be made to the appendix of the late C. M. Diesing's *Systema Helminthum*, it will be found that Jackson's statement had not escaped that helminthologist's notice, though, not having seen any specimens, he was not unnaturally led to place the species amongst the distomes, properly so called. In Diesing's subsequently published *Revision der Myzelminthen* the species is formally characterised as the *Distomum elephantis* of Jackson (*Sitzungsberichte d. Math.-nat. Cl. d. k. Akad. d. Wissenschaften*, Bd. xxxii, 1858). In my synopsis of the Distomidæ, which appeared in the *Journal of the Proceedings of the Linnean Society* for 1861, I also placed this form amongst the distomes, but I did not consider it to be a doubtful form as Diesing had done (*P. L. S.*, "Zoology," vol. v, p. 9). So far as I am aware these references exhaust the literature of the subject up to the time of the issue of my *Manual* in 1873, where at p. 13 the fluke in question is again briefly noticed. I may mention that several of Prof. Huxley's specimens were placed in the hands of Prof. Flower, Conservator of the Museum of the Royal College of Surgeons, under whose direction six of the flukes were selected, mounted, and added to the rich entozoological department of the Hunterian collection.

Interesting as the above facts are to the helminthologist, I should not introduce the subject into the pages of the *Veterinarian* were I not in possession of additional facts, tending both to confirm the statements originally communicated to Professor Huxley and to increase our knowledge of fluke diseases in general, as well as of the *rot* as it affects elephants in particular.

Moreover, so rapid are the strides of helminthology in reference to the correct understanding of epidemics involving both man and beast that, work as one may, it is almost impossible to do justice to the multitude of novel facts that are weekly, I might almost say daily, presented to our notice. Throughout the East, especially in India, members of the medical and veterinary professions, and also army officers, to judge by their frequent contributions, seem to be much more impressed with the importance of a thorough knowledge of parasites than do some of those who are placed in the van of the same professions at home.

About the middle of June last I received an interesting letter from Lieutenant-Colonel Hawkes, of the Madras Staff Corps, dated Secunderabad, the 12th of May, 1875, and in reference to the subject before us he writes as follows :—"My attention has been recently directed to a very unusual mor-

tality of elephants at this station. Out of twenty-eight elephants under my charge, no less than twelve have died within the last sixteen months, whereas the average annual mortality has been hitherto only two per annum out of thirty-eight on our establishment. In every case of death there appeared to exist serious organic disease quite sufficient to account for such death, but as the mortality increased I had a *post-mortem* examination made of each case; and although here, also, organic disease sufficient to account for death was present in each case, yet in every one of these elephants we found the liver-fluke in greater or less abundance."

Lieut.-Col. Hawkes next proceeds to say that he hopes again to address me on the same subject, and adds—"Meanwhile I have sent you a small box containing three bottles, one containing the liver-fluke (*Fasciola Jacksoni*) referred to in your work on the parasites of domesticated animals. It seems (to me) possible that the other two species of parasites may not have been brought to your notice.

"Both of these, namely, the 'Masuri' and the 'Soorti,' are very common in elephants. They are both found in the intestines only. The 'Masuri,' when present in any quantity, cause considerable disturbance, and the animal instinctively resorts to the *eating of earth*, which it consumes in large quantities until the bowels are acted on and the worm expelled.

"The Soorti is more common than Masuri, and does not seem to inconvenience the animal very much. I may add that the specimens of Soorti sent to you are somewhat shrivelled up, the spirit having been too strong, but the anatomical characters will still remain. When expelled from the animal the Soorti is a round white worm, like most of the threadworms; the Masuri, on the other hand, is of a delicate flesh colour."

The perusal of this letter having naturally raised my hopes of receiving some parasites that would prove new to science, I was much gratified when only a few days subsequently, through Messrs. Dawson and Sons, I obtained the entozoa in a good state of preservation. Accordingly I wrote to Lieut.-Col. Hawkes, stating that the flukes, of which he sent me no less than thirty-seven specimens, were clearly referable to the *Fasciola Jacksoni;* that the parasites (to which the natives of Hindostan apply the term "Soorti") were evidently examples of the *Ascaris lonchoptera* of the Vienna systematist (Diesing), previously called strongyles by Rudolphi; and that the parasites which he called Masuri

were trematodes which were, in my opinion, entirely new to science. I provisionally named the species *Amphistoma Hawkesii*, in honour of the donor. The bottle contained as many as forty-nine specimens.

In this place the readers of the *Veterinarian* will hardly look for a scientific and anatomical description of these various parasites, which will be more properly communicated to some one or other of our learned societies. In the mean time, however, I may remark that I have made inquiries of the keepers of the elephants at the Zoological Gardens as to whether they have ever seen entozoa that were passed by the animals under their care. They replied in the negative; the keeper of the African elephants (Scott) having since made frequent inspection of the fæces without success. I was the more anxious to secure information on this point since, during my frequent visits to the menagerie, I had observed that the African elephants (especially the female, which, by the way, has lately torn off the end of her trunk) were in the habit of swallowing large quantities of mud and dirt from small hollows in the ground near the great water-tanks in which they bathe. Professor Garrod, Prosector to the Zoological Society (who has dissected three elephants and who is always on the look-out for parasites), also assures me that there has been no trace of an entozoon in any of the Indian elephants examined by him in this country. In one dissected at Edinburgh the same negative result was obtained. From all the facts, therefore, at present in my possession, I have come to the conclusion that the habit of earth-eating displayed alike by Indian and African elephants is not necessarily due to the presence of flukes and other parasites, but rather that it is resorted to by these animals under any circumstances of intestinal irritation, whether created by entozoa or any other agent.

Lieut.-Col. Hawkes, in accordance with his conditional promise, has since supplied me with much fuller information; and his remarks are so thoroughly practical that only the fear of repeating some of the facts already given prevents my recording the whole of his long and very valuable communication. Dating his second epistle from Secunderabad on the 30th of July, he says—"Last night's English mail brought me your letter of the 30th of June, which is of the greatest interest. As I did not (for obvious reasons) previously enter into the subject so fully as I might have done, I proceed to offer a few more remarks. As regards the liver-fluke (*F. Jacksoni*) it appears from your treatise to have been first observed in 1847. The only other published notice

that I have been able to find of it is contained in a letter to a newspaper, dated 'Rangoon, 16th July, 1867,' and is signed 'R. B.' In this letter the unusual mortality of seven elephants in about fifteen days is attributed to the presence of this liver-fluke, the two other parasites (*Amphistoma* and *Ascaris lonchoptera*) being also present in the intestines."

Lieut.-Col. Hawkes does not, of course, mean to say that the writer "R. B." recognised the true nature of his amphistoma and ascaris 'finds,' but that, from the description given, the parasites were undoubtedly referable to the above-mentioned species, one of which is altogether new to science. Lieut.-Col. Hawkes appears to have lost two more elephants since he first wrote, for he says that he has lost fourteen, during the past eighteen months, out of a total of twenty-eight. He then proceeds—"In every case but one a *post-mortem* has been held by a veterinary surgeon, at which I have almost invariably been present. The 'cause of death' has been recorded by the various veterinary surgeons as follows:

Inflammation of the intestine	4
Inflammation of lungs	2
Inflammation of lungs and liver	1
Dropsical swelling	1
Splenic apoplexy	2
Old age	1
Atrophy of the heart	1
Sunstroke	1
No *post-mortem* held	1
	14

"Now [continues Lieut.-Col. Hawkes] in every case at which I was present *flukes were found in greater or less numbers* in the gall-ducts of the liver, and the amphistoma was also as constantly present in the intestines, the Soorti (*Ascaris lonchoptera*), contrary to the general experience of the elephant attendants, being less frequently met with, though from its colour and slender shape it is not so easily detected among the huge mass of fæces as the larger amphistoma. In some cases flukes were in large numbers, apparently collected in bunches in the gall-ducts, but disease of the liver did not necessarily appear to follow, nor where disease was actually present did it seem to bear a constant ratio to the number of flukes in the gall-ducts. From the above casualty list you will see how various have been the diseases which are recorded as having been the cause of death; and we have consequently found it impossible to satisfy ourselves to what extent, if any, the liver-fluke contributes to

originate these varied forms of disease. Notwithstanding the number of deaths and the fact that the flukes have been nearly always found at the *post-mortem*, I confess that up to the present we have been unable to single out any symptom from which the presence of flukes could be diagnosed before the death of the animal. The symptoms in all cases have been apparently those of the diseases from which the animals were found on *post-mortem* examination to have died. I will enclose in this letter an extract from a memorandum drawn up for me by one of our most experienced veterinary surgeons, on the case of an elephant that died on the 14th of April last of disease of the lungs and subacute inflammation of the bowels, and in which flukes were found in large numbers. The swelling under the jaw is suggestive, but was not always, or indeed often, present. In the only other case (where the parotid glands were swollen) the liver was more healthy and had fewer flukes than any in the whole series.

"I now proceed [says Lieut.-Col. Hawkes] to give what information I can regarding the amphistoma. This internal parasite is well known to all who possess elephants. It is alluded to by Dr. Gilchrist in his treatise on the diseases of elephants, first published in 1841; but he merely mentioned it under its local name, *masuri*, and made no attempt either to describe it scientifically or to ascertain its place in the natural system. As far as my experience goes it is only found in the intestines. These parasites appear to be very generally present in the elephant. When their numbers are few the 'host' is probably not much inconvenienced, but when present in any great quantity they undoubtedly cause much irritation. When this is felt the animal (as before remarked) instinctively resorts to a simple and effectual remedy. He eats a quantity of earth, which purges him thoroughly and expels the amphistoma. The Mahawats are of opinion that whilst the elephant is eating earth to relieve himself of the pests the daily allowance of rice should be scrupulously withheld; and they say that if the rice which is given uncooked is eaten by the animal under these circumstances, excessive purgation is induced, which frequently results in death. How far this opinion is founded on fact I am unable to say, but the Mahawats' name for this disease, literally translated, means 'fasting,' and bears testimony to the generally received notion of the necessity of withholding the rice when the animal is eating earth.

"But [continues Lieut.-Col. Hawkes], apart from the interest in the study of this amphistoma of the elephant, your

remark that you have recently received from India some amphistomes from the horse has incidentally thrown light upon a subject which has puzzled many of us in this country. It occasionally happens that a horse belonging to one of the mounted branches of the service, on being opened after death, is found to have accumulated in his intestines large quantities of sand or gravel. In a recent case this accumulation amounted to fourteen and a half pounds. Until recently it was always held that this gravel or sand could only be introduced into the animal with his food. All grain in this country is trodden out by bullocks on an earthen floor, and the grain (a small pulse) undoubtedly contains a proportion of sand and gravel derived from this source. Although this *ought to be* carefully washed out before it is given to the horse, still, owing to the carelessness of the native horse-keepers, this cleaning is, I expect, often omitted. In the daily 'feed' of eight or ten pounds of grain given to each horse the utmost quantity of sand or gravel that could be found admixed therewith would not probably exceed two or three ounces; consequently it would take from 77 to 116 days to accumulate so large a quantity as fourteen and a half pounds. Now, the advocates of the theory of the gradual accumulation of sand in this way have never been able to explain why the grain, grass, hay, and other ingesta should pass in the ordinary way through the intestines, whilst this sand or gravel remains behind. One can understand the possibility of such substances as wool, hair, or similar matters concreting in the alimentary canal, though I believe they are usually found in the stomach, and not in the intestines; but how a most cohesive substance like sand can possibly accumulate in the gradual way required by their theory I have never heard even plausibly explained. On the other hand, the fact that horses are often excessively addicted to eating earth is well known; and if my memory serves me correctly, it was found necessary, some twenty odd years ago, to remove the mud-walls round the pickets round some of the horses of a mounted corps in this presidency in consequence of this habit. Now, given the fact that the amphistoma has been found in the horse (as your specimens prove), may we not fairly suppose it possible that the animal resorts to the same mode of ridding himself of this parasite as does the elephant? and also, would it not in a much more natural manner account for the large quantity of gravel or sand found in the intestines than does the present theory of gradual accumulation? Reasoning from analogy, as in the case of the elephant, this eating of earth in the horse would

be an instinctive effort on the part of the 'host' to rid himself of the parasite. This self-taken remedy is doubtless in many cases quite effectual, *though unnoticed*. The fatal cases are probably those in which the horse has either overdone the remedy or where the system was too debilitated to carry off a quantity of sand or gravel that would otherwise have safely passed through the intestines of a horse in more robust health. The actual fact must, of course, be verified by careful investigation, but, the probability of the amphistomes being the exciting cause of this depraved appetite being once allowed, I doubt not that many would follow up the inquiry."

Lieut.-Col. Hawkes having solicited my opinion on this point, I have no hesitation in expressing the belief that in the particular cases he refers to the amphistomes may be a true cause of this earth-eating propensity, and I make this statement in the fullest anticipation of receiving evidence of the frequent occurrence of these parasites amongst horses employed in Her Majesty's Indian Army. From what I have noticed at the Zoological Gardens, however, I strongly suspect that, as in the case of elephants, other kinds of intestinal irritation may produce the same habit in the horse. To be sure, the animals that I have actually seen behaving in this manner are still alive, and it is therefore not certain that they are free from amphistomes, but the keepers have informed me that the habit in question was common with the Indian elephants lately forming part of the society's collection. Lieut.-Col. Hawkes not unfairly observes that the recent discovery of amphistomes in India may have been indirectly brought about by his own previous efforts to throw light on the subject. At all events, he reported on this habit a year previously, expressly pointing out that these earth-eating propensities on the part of the horse were, to all intents and purposes, the same as those indulged in by the elephant. This remark naturally leads me to speak of the equine amphistomes.

As already acknowledged in the *Veterinarian* for last July (p. 513), these amphistomes were sent to me by Mr. F. F. Collins, Officiating Principal Veterinary Surgeon in connection with the Bengal Army. As they were forwarded during the early part of the present year, it is not unlikely that Mr. Collins may have had his attention directed to the matter by the perusal of Lieut.-Col. Hawkes' report. Be that as it may, Mr. Collins' contribution forms a clear addition to the already extensive parasitic fauna of the horse. On referring to his letter addressed to me from Simla on the

22nd of March, 1875, I find that Mr. Collins makes no allusion to the habit in question, but simply writes :—" I forward you by this mail parasites found in the colon of a horse that died a subject of fever peculiar to this country. There were *about a thousand* of the parasites, and nearly the whole of them were situated close to the cœcum, and were loose in the gut. Not having seen parasites at all similar to these, I have taken the liberty to forward them for identification. They were of a brick-red colour when first obtained." These explicit and brief statements by Mr. Collins are highly interesting from many points of view ; and one has only to place his specimens (thirty-three in number) side by side with those from the elephant in order to satisfy one's self that the two forms are totally distinct. The smallest specimen from the elephant is considerably larger than the largest sent by Mr. Collins. This new worm from the horse I therefore propose to recognise as the *Amphistoma Collinsii*, in honor of the donor. It is quite probable that other veterinary surgeons have encountered this entozoon in India, but, unless they can point to some published account of the fact, Mr. Collins is entitled to be considered as the discoverer. Moreover, although the parasite may happen to have been locally known to natives, science equally recognises the discovery as such. In like manner a public reference to parasites thus known, if unaccompanied either by a description or proper scientific designation, leaves it open to any zoologist to name the parasite in any distinctive and suitable manner. In naming the new parasite from the elephant I have been guided by this generally accepted rule, notwithstanding that Lieut.-Col. Hawkes (whose style of writing bears the stamp of a *savant* rather than that of an ordinary observer) has most generously referred me to a previously published notice of the *masuri* by Dr. Gilchrist. In a third communication, dated from Secunderabad on the 11th of August, Lieut.-Col. Hawkes says that the first printed account was by Dr. Gilchrist in 1841, giving a popular account of the parasite, " which had been well known to every elephant attendant since this animal was first domesticated." Notwithstanding Lieut.-Col. Hawkes' unselfish suggestion, I adhere to my original proposal, partly for the reasons already assigned, and partly also from the circumstance that many other European residents in India, Ceylon, and Burmah must, like Dr. Gilchrist, be well acquainted with the *masuri* as such, though totally unaware of the zoological position and significance of the species. Until lately only one species of entozoon from the elephant was recognised as genuine. Now we have admitted

three, and doubtless more will be forthcoming. In regard to the *Ascaris lonchoptera*, of which I have received five specimens, Lieut.-Col. Hawkes communicates no fresh facts, but he promises to send me some parasites (amphistomes) from the ox, and hopes also to send others from the sheep, with a specimen of the well-known intestinal concretions that are so common in Indian cattle. Meanwhile I am under further obligation to Lieut.-Col. Hawkes for enclosing for my use an instructive abstract of a memorandum by a veterinary surgeon on the mortality of elephants at Secunderabad. The reporter, whose initials only are appended (W. S. A.), writes as follows:—"The cause of death is variously recorded; one died suddenly from apoplexy (*i. e.* the 'sunstroke' case in the table supplied by Lieut.-Col. Hawkes), another from atrophy of the heart. The following is a record of the last case that died, and on which I [W. S. A.] made a *post-mortem* examination:—*Symptoms*.—Firstly, usual symptoms of fever, total refusal of all food; subsequently, symptoms of abdominal pain, restlessness, frequently lying down and quickly getting up again, a swelling under the jaw, animal standing with mouth open and head extended. He was latterly much distended, and died somewhat hard eight days after first attack. *Post-mortem appearances*.—Carcase much distended, visible mucous membranes highly congested and of a blue colour. On cutting into abdomen found a considerable quantity of light-coloured serous effusion; the intestines were greatly distended. On the mesentery and at the mesenteric artery was a large quantity of gelatinous sero-albuminous exudation. On laying open intestinal canal found subacute inflammation extending throughout the large intestines; there were also in the large intestines a large number of the round disc-shaped pink-coloured entozoa* found in elephants and called by the natives "masuri." The *liver* was externally of a light slate colour; on cutting into it found a most extraordinary number of the "liver-fluke." The bile-ducts were thickened. On being cut the liver was firm and there was a grating sound to the cut. *Kidneys* healthy. Right *lung* diseased, congested throughout, and hepatized towards the anterior portion. Left lung slightly congested, but comparatively healthy. The mucous membranes of the trachæa and bronchi were congested. *Heart* healthy, with the exception of a small patch of extravasated blood beneath the endocardium on right side. I recorded the "cause of death" to be disease of the lungs and subacute inflammation of bowels. No doubt this was the immediate cause of death, but the large

* These are the amphistomes.

number of flukes in the liver and the intestinal parasites (*i.e.* the amphistomes) account in a great measure for some of the symptoms shown, and these symptoms accord in many respects with those shown in elephants that died in Burmah during the epizootic (rot) in 1867, as recorded by R. B., notably refusal of food, standing with mouth open, restlessness and puffiness about the head and shoulders. The liver parasite is no doubt the same referred to by R. B., and is that termed by Dr. Cobbold *Fasciola Jacksoni* in his work on the internal parasites of domesticated animals" (W. S. A.).

In reference to a later case the same officer remarks:—"I carried out the *post-mortem* examination with special reference to inquiry as to the probability of the mortality amongst elephants at this station being of parasitic origin. This was suggested to me by the former case. The *post-mortem* appearances differed in every respect. There were flukes in the liver, but in no great quantity, and the structure of the liver was sound. Although not assisted by this case in attributing the mortality to parasitic origin, I am strengthened in my opinion that the death of the previous elephant was due to disease caused by the presence of the liver fluke" (W. S. A.).

So much for the veterinary surgeon's report, the results of which are for the most part in harmony with information derived from other sources. Almost every succeeding day supplies me with fresh evidences in reference to the great influence that parasites exert in the production of epidemic disease, alike affecting mankind and animals—the latter indeed from the highest to the lowest degree of organisation. I cannot, indeed, expect that those who have not studied the subject of parasitism so long and patiently as myself should all at once share my views on this subject. My efforts, however, during the past quarter of a century to open out new lines of research in helminthology have not, I believe, been unattended with good practical results. At all events many officers and professional gentlemen have greatly advanced the subject by placing valuable specimens at our disposal; and not a few others (to name only Lewis, McConnell, Oliver, Welch, and Joseph Fleming) have independently contributed memoirs and discoveries, some of which admittedly take rank amongst the most important modern additions to medical literature.

One word more. Mr. Folkard, M.I.C.E., informs me that the Ceylon elephants are great *earth-eaters*, and Dr. J. P. Rowe also tells me that the Australian horses and sheep (infested with stomach worms) consume large quantities of sand.

TYPHOID FEVER IN PIGS.

By J. Wortley Axe, M.R.C.V.S., F.C.S., Professor of Histology and Morbid Anatomy in the Royal Veterinary College.

(*Continued from p.* 641.)

The pathological changes developed during the progress of *enteric disease* are, as a rule, definite and specific. Under some circumstances, already referred to in regard to the duration of the malady, the characteristic lesions of *pig-typhoid* are but feebly developed, or altogether absent. This exception to a general rule is not confined to the disease in question, but will be found to apply to every member of the particular group to which it belongs, whether in connection with man or the lower animals. It is in rapidly fatal cases, or such as are the result of a high degree of infection, that the characteristic lesions of *typhoid* do not develop. In instances of this kind the specific fever process is cut short, and the pathological changes are arrested. Beyond the general blood stasis and extravasations now induced, nothing remains to indicate the nature of the malady.

Under ordinary circumstances various organs of the body participate in the morbid action; but whether the lesions induced are in them all the direct effect of the specific fever process, or in some the result of a secondary cause, is at the present time a debatable question. In the solitary and aggregate glands of Peyer are found the most permanent and characteristic morbid changes, changes wholly unlike any other known to pathology, changes which are as specific as they are decided.

Before considering the internal lesions we may notice those appearances which are commonly presented by the skin. The one most frequently observed, and from which the disease has received various common terms, has reference to colour. It has already been observed in speaking of *pig-typhoid* that the rubeloid rash which accompanies the cutaneous eruption is followed by the development of a blue or deep purple hue. This colour is persistent and unaffected by pressure, and, as before remarked, is due to an escape of blood from the cutaneous capillary plexus into the structure of the skin. The extent as well as the intensity of this discoloration varies in different cases, and seems to be in proportion to the duration of the attack and the severity of the

skin eruption. The ears, breast, belly, and haunch are the parts where it is most commonly found; but in a great percentage of cases the entire surface of the skin is uniformly stained. Petechial spots and small flea-bite-like points as well as more or less freckling of a yellowish-brown colour are likewise to be seen on various parts of the body when not occluded by the purple discoloration referred to. One or both of the ears, the digits, or the tail, are sometimes partly or entirely removed by the sloughing process. It should be remarked in connection with these lesions that they are peculiar to protracted cases, and usually follow sudden and intense discoloration of the organs indicated. It would be interesting to inquire, Why in the pig the skin should be so liable to blood extravasation in *enteric disease*, while in the human subject such a condition is rarely observed? Does the exposure to which pigs are usually subjected while passing through the fever state, added to the absence of the natural protection afforded by hair, determine a blood stasis and ultimately extravasation? This is a question which may fairly be asked here. The skin of the human subject, while passing through a fever attack, is protected by warm clothing, and this is supplemented by well-regulated artificial heat, both of which would play an important part in maintaining the cutaneous circulation and the integrity of the capillary system. Without some such explanation it is difficult to assign a reason for such an exceptional phenomenon occurring in a disease every phase of which is otherwise identical in the two subjects.

Intestines.—With regard to the intestinal lesions, it will be well to notice them in the order of succession. The disruption of the Peyerian follicles is preceded by a generally congested state of the mucous membrane of the intestinal canal. "Like red sealing-wax" was the expression employed by Mr. Kieval to define this condition as observed by him in several pigs which were slaughtered in the early stage of the disease, and I do not know that I could offer a more lucid description. The extent and intensity of the redness will depend upon the severity of the disease and the period at which the examination is made. The congestion is usually greatest in the large intestine, and may be either uniformly diffused over the entire surface of the membrane or developed in irregular, scattered patches. In whichever condition it may be, and wherever it may occur, it is most marked and severe in those parts contiguous with the isolated and aggregate glands.

From numerous observations it is tolerably clear that the

intestinal and cutaneous rash are developed simultaneously. Associated with this hyperæmic state of the mucous coat of the bowel there is more or less general tumidity, and the membrane is less consistent than natural. Moreover it is covered with a thick tenacious reddish-brown mucus. The Peyerian glands are enlarged, the isolated follicles stand out from the general surface in the form of small, round, pea-like bodies, while the clustered groups are recognised as raised ovoid patches bordered by a zone of intense redness. The glands thus enlarged are firm to the touch. On section they present a greyish-white hue and uniform consistence. Such as are undergoing a retrograde metamorphosis, however, are yellow in colour, soft and granular. With the increase of the gland-cells the follicles become more and more distended, and ultimately a rupture takes place at the summit. The contents of the vesicle are now exposed. The development of the typhoid matter may cease here, or continue to grow into large raised, grey, firm masses. The morbid process having ceased to confine itself to the Peyerian glands, the submucous, muscular, and superitoneal layers of the gut are in turn invaded with the typhoid growth, and no line of demarcation can now be recognised between them. The wall of the intestine at the seat of the eruption is converted into a firm, rigid, and inflexible mass, limited only by the peritoneal tissue, through which it may be seen. In reference to these typhoid excrescences it is important to notice their physical characters. 1. They are thick in the centre and gradually become thinner towards the circumference. 2. The centre is occupied by a circular smooth lamina, circumscribing which are a number of distinct concentric markings, having a more or less rough appearance. 3. The free surface is of a yellow or yellowish-brown colour. It is most likely that this staining of the deposit is due to bile pigment, inasmuch as the natural hue of the growth is, as before remarked, of a greyish-white colour; sometimes, however, it is streaked or uniformly stained with extravasated blood. 4. In consistence they are firm, elastic, and uniform, or granular. 5. In form they are round, ovoid, or irregular, and in regard to size they vary to a considerable extent. They are round when occurring in connection with isolated vesicles (and this is by far the more common form), ovoid when the aggregate follicles are involved, and irregular when confluent. The size of the typhoid excrescence depends partly upon the distinct or confluent state of the eruption, and partly also upon the size of the Peyerian patches involved. In several instances I have seen the entire circum-

ference of the mucous layer of the gut, to the extent of a foot or more in length, involved in the diseased process, and the development of the typhoid matter has been sometimes so extensive as to completely occlude the canal; such a specimen is now before me. In this instance the wall of the intestine measures over an inch in thickness. The part was removed from one of the sows already referred to in connection with the outbreak at Stratford-on-Avon. Sooner or later the typhoid masses are removed. During this process the mucous membrane surrounding them becomes red, tumid and angry looking, separation at one or more points is effected sooner or later, and ultimately the slough is free from the mucous layer. The latter recedes from the sphacelated patch, and being now separated also from the submucous tissue, forms a loose raised border around the typhoid mass. Gradually the hyperæmic condition of the mucous membrane subsides and the slough is further detached either entire or in fragments. On the removal of the erupted mass the typhoid ulcer is exposed. In some instances every phase of the development and degeneration of the typhoid excrescence may be distinctly observed, as well as the various stages of cicatrization.

It is well worthy of remark that a very large proportion, if not in a majority, of cases the specific morbid growth is not confined to the mucous membrane, but involves also the muscular and subperitoneal layers. The infiltrated structures are inseparably fused together, and, as before observed, cannot be distinguished from each other. In this condition the typhoid patch is firmly connected with the peritoneum and imparts to the exterior of the gut a greyish-white opaque appearance and a thick leathery feel. The close and firm adhesion of the morbid product to the serous layer of the intestine renders the process of detachment slow and painful, and the persistent irritation occasioned by its presence is doubtless the explanation of that protracted and destructive diarrhœa which is one of the main features of the malady. Although the ulcerations exposed by the displacement of typhoid sloughs usually proceeds to cicatrization, resulting in a healing of the broken surface, nevertheless perforation of the gut is, as before remarked, by no means rare. The last-named event is invariably associated with serious lesions of the peritoneum. The nature and extent of the perforation is liable to considerable variation. It may be single, or as I have more frequently found it, multiple. The openings—two, three, or four in number, usually from two to five lines in diameter—are round or irregular in form, and where adhesion

to the serous layer has fortified the broken intestine the edge of the apertures is soft and granulating. In one instance (Mr. Gore's sow) I had the opportunity of examining the portion of the colon of a pig which exhibited a rent three quarters to an inch in length. The lesion extended through a typhoid excrescence, and was most likely referable to the soft, granular, friable state into which the structure had degenerated. The specific changes just described result in various lesions of the peritoneum. Adhesion of the coils of the intestine may occur either from irritation induced in the serous layer by the hard rigid typhoid patch or as the consequence of an escape of some of the contents of the bowel through the perforated gut. In the former case this union of the peritoneum is usually confined to the vicinity of the patch itself, while in the latter the adhesive process is excited over a much larger area. Under the circumstances last referred to, not only are the folds of the intestine glued together, but one or more of the abdominal viscera may be also attached to them or to each other, or to the abdominal walls. Patches of recent lymph are also commonly met with on various parts of the peritoneal surface, and the serous cavity contains more or less of a turbid, yellow, or reddish-yellow stinking fluid.

Associated with these morbid changes there is patchy, punctate, or diffused redness and opacity of the membrane. Diffused peritonitis is a common result of perforation of the intestine, but it may also arise entirely independent of it, and especially so should the typhoid process be extensive and severe. At what precise period during the progress of the malady the intestinal ulcer is first developed, and in what relation its development stands to external phenomena, is a highly interesting question. At present our data on this point are insufficient to furnish a reliable answer. That the fatality of enteric disease is not always in proportion to the extent of the ulceration we have abundant evidence.

The relative frequency of the eruption in regard to the different parts of the intestinal canal has not been definitely determined. It may, however, be mentioned that of the large and small intestines the former is by far the most frequently and extensively affected. The Peyerian patches are by no means seldom involved, but according to my own experience the heterologous growth is mainly developed in the isolated follicles. It is on these organs that the chief force of the disease seems to fall. Next in importance to the intestinal lesions are those which occur in connection with the *lymphatic glands*. It is material to notice that while

these structures are universally affected by the typhoid state, in some instances they undergo a peculiar structural change, which if not identical with, is, to say the least, very similar to that specific metamorphosis referred to the solitary and aggregate glands. In the most rapidly fatal cases of *enteric disease* the structural changes which appear in the lymphatic glands mainly refer to the vascular system. In almost every part of the body these organs are more or less involved. Some are simply hyperæmic, without any perceptible alteration of form or size. Others are tumid, tense, and of a dark red hue, while many are infiltrated with blood, black, soft, and pulpy. It is, however, more particularly with regard to those glands in connection with the intestinal canal that the most striking and specific changes are found. Here we observe, besides an increase in the size of the lymphatic nodule, the gland tissue is infiltrated with a greyish-white, opaque, medullary looking matter. Section of a diseased gland exposes a firm, uniform, or soft granular-looking surface. Sometimes it is streaked or blotched with blood, at others it is spotted over by yellowish softened masses of the degenerated growth. If a portion of the gland be compared with a similar piece of the diseased gut, it is difficult indeed to regard the changes observed in them otherwise than as the result of one and the same pathological process. Those glands corresponding to the intestinal lesions are almost invariably the seat of this peculiar morbid development; but the force of such a fact is capable of being directed so as both to affirm and to negative the indentity suggested. Whether the new growth in the lymphatic glands proceeds simultaneously with that in the isolated and aggregate follicles as the direct result of the specific fever process, or whether it is to be regarded as the effect of a cause arising out of the latter, is a question of considerable interest. That the lymphatic glands are universally and progressively affected during the typhoid process I am convinced, but how far the lesions in question are referable to it I am not so satisfied.

Stomach.—The mucous membrane of this organ is variously affected. Sometimes it exhibits patchy or diffused hyperæmia, less frequently blood blotches and petechiæ. Associated with these lesions of the vascular system is more or less derangement of the follicular apparatus. Scattered over the mucous surface a number of small white spots are seen, not larger than a pin's head. These are the gastric tubes gorged with a greyish-white lymphoid deposit. When clustered groups of these tubes are invaded a more or less thick granular-looking layer is developed by the coalescence

of the projecting morbid material, and this extruded matter presents all the physical characteristics of the Peyerian exudation.

Spleen.—In the majority of instances the spleen is tumid; its trabeculæ are soft, lax, and easily broken down. The pulp is dark in colour, slight in consistence, and sometimes mingled with small, soft, black coagula; occasionally small embolic abscesses are found in the structure of the organ, rarely rupture of the capsule.

Liver and kidneys.—In protracted cases of *enteric disease* these organs are soft in consistence and more or less friable. When the disease is acute and quickly fatal they are hyperæmic, and studded with blood spots or blotches. All the other viscera of the abdomen, as well as the interlaminal spaces of the peritoneum, do sometimes also exhibit blood extravasations and engorgement. The last-named conditions are usually the result of septicæmia, and not the direct outcome of the fever process.

Lungs.—Pulmonary congestion, more or less extensive, œdema and apoplexy, are very commonly met with as the result of *enteric disease.* The ordinary results of pneumonia, as consolidation and softening, are not seldom to be observed. But more important than these are those changes which in their general characters so clearly resemble the specific intestinal eruption. The following description of the lesions found in the lungs of two of my experimental animals may serve to convey an idea of this peculiar likeness. The lungs were slightly congested throughout. In each from two to four greyish-white masses of various sizes were observed beneath the pleura. They were surrounded by a zone of intense redness and sharply circumscribed by the lung tissue. The pleura as it covered them was opaque, and in some instances adherent to the parietal reflection of the membrane. On section several other similar growths were exposed in the substance of the organs. In consistence the morbid masses were firm, and throughout of a greyish-white hue, slightly streaked with extravasated blood. The many characters which the intestinal, lymphatic, and pulmonary lesions have in common with each other, although far from conclusive, lend considerable force to the idea that in nature they are identical.

Fauces and pharynx.—In a large proportion of cases of pig-typhoid, and more especially in those of several weeks' duration, the mucus-follicles of the fauces and pharynx exhibit a condition very similar to that of the gastric tubes. In cases of a more severe and protracted nature ulceration of

these parts, as well as of the larynx and tongue, is not rare.

Brain.—In instances where the cerebral disturbance has been the most marked, and where it has continued up to the time of death, I have failed to recognise any alteration in the colour or consistence of the cerebral substance, nor have I noticed any appreciable increase in the arachnoid secretion.

(*To be continued.*) 821

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 649.)

Rhamnaceæ, or Rhamnads, are known to us by our native *Rhamnus catharticus*, a shrub which is common to our hedgerows, and the *R. frangula*, locally met with in hedges and bushy places. The former is well known as yielding a black or dark-green berry or drupe, the juice of which is extensively used as an adjunct—if not in legitimate veterinary practice, is yet extensively employed by the country farrier and the dog-fancier.

The berries are highly cathartic, and the juice made into a syrup is used as a vehicle for the exhibition of still more active medicines; hence the farrier uses it to make up physic masses, and the dog-doctor is exceedingly fond of it to make up pills with sulphur as a canine medicine; hence the country people gather the berries with great care to sell to the druggists by whom the syrup is prepared. It was formerly employed in the human school, but we know of no instance of its use in modern practice. Professor Lindley, speaking of the order, says—

"The berries of various species of Rhamnus are violent purgatives, and have been highly spoken of in dropsy. They also yield a dye varying in tint from yellow to green; the ripe berries of *R. catharticus*, mixed with gum-arabic and lime-water, form the green colour known under the name of bladder-green. The French berries of the shops (*graines d'avignon*, Fr.) are the fruit of the *R. infectorius*, *saxatilis*, and *amygdalinus*. Those of the *R. infectorius*, when unripe, are used by the modern Greeks to dye morocco leather yellow. The fruit of *Zizyphus vulgaris* and *Jujuba*, the *Z. omoplia* and *Z. joazeiro*, whose drupes are used in Brazil as jujubes. The Lote-bash, which gave its name to the

ancient Lotophagi, is to this day collected for food by the Arabs of Barbary, who call it *Sadr*, and its berries *Nabk;* it is the *Z. lotus* of botanists." *

It would appear, then, that the Rhamnads have various qualities, among which the medicinal ones are not of a very active description.

The CELASTRACEA, *spindle-trees*, are well represented by a most interesting native species, the *Euonymus Europæus*, the spindle-tree of our floras. This plant derives great interest from the structure of its somewhat remarkable fruits. The plant is described as follows in the 'Treasury of Botany':

"EUNONYMUS.—The spindle-tree, a common hedge-shrub or small tree, better known among mechanics by the names dogwood, pegwood, skewerwood, and prickwood. It may be discriminated in summer by its ovate, lanceolate, shining leaves, and by its small pale-green flowers, each composed of four petals, issuing crosswise from a whitish disc. These are borne, two to five together, on a stalk in the axils of the leaves, and are succeeded by top-shaped seed-vessels of three blunt lobes, and as many cells, each containing a solitary seed. Towards autumn these become more conspicuous among the leaves (now turning yellow) by their assuming a pink hue, and when the tree has entirely lost its foliage they are highly ornamental. Each of the lobes of the capsule, which have by this time acquired a bright rose-coloured hue, opens at the projecting angle, and discloses the seed wrapped in an orange-coloured arillus. The foliage, flowers, and fruit of the spindle-tree are poisonous, but the last are sometimes used as a dye. The wood, which is of a light colour, being strong, compact, and easily worked, is applied to many useful purposes. Skewers, pegs for shoes, spindles, toothpicks, readily suggest the derivation of its various names. The charcoal made from the young shoots is also much approved by artists for its smoothness and the ease with which it may be erased. Among foreign species cultivated in British gardens *E. latifolius* is the handsomest, from its broad shining leaves and its large red pendulous seed-vessels, with orange-coloured seeds, which, when the capsules open, are highly ornamental. *E. Japonicus* is an evergreen species with rounded ovate-toothed leaves (French, *fusain;* German, *Spindlebaum*)." *

We have made this somewhat long extract on account of its clear description, but the student should examine the

* 'Vegetable Kingdom,' p. 582.
* 'The Treasury of Botany,' vi, p. 475.

plant and its fruit as found commonly in our copses and hedgerows, and more especially on limestone soils.

The STYRACEÆ—*storax-worts* though not represented by any native species, are yet known to all rather from their products than from their plants, as these latter have received little, if any, attention from the cultivator, as they are not sufficiently showy for the garden.

The student will recognise the following products as of common use—gum storax from the *Styrax officinale*, and gum benzoin, or benjamin, from the *Styrax benzonin-benzoinum*. The latter will be found of interest as furnishing a gum-resin, or rather a balsam, which enters into the composition of friars' balsam (*Tinctura benzoini composita*).

Professor Tuson, speaking of benzoin, has the following:

"ACTIONS AND USES.—*Internally*: Stimulant and anti spasmodic; but seldom or never given at the present day *Externally*: Excitant to wounds and contusions, in the form of *Tinctura benzoini composita* (friars' balsam)."

Now, though this tincture is so shortly dismissed by the learned professor just quoted, and the benzoin is not even mentioned at all in Morton's 'Veterinary Pharmacy,' yet we can affirm that friars' balsam is still very largely used both in farriery and in rustic practice. The principal use of it in the country is in sheep-shearing. With us, while the shearers are plying their busy shears, the shepherd is at hand with a bottle of friars' balsam, in the which he has ready a stick armed with a bit of tow, with which any wound made by the shears is immediately dabbed with the balsam. This is supposed not only to have a direct healing influence, but tends to ward off the flies which might otherwise be troublesome to fresh wounds. The goodwife, too, is seldom without friars' balsam in her storeroom with which to bind up bruises and cuts, and well do we remember the smart of its application, though we must say that the effects were always good.

Professor Lindley says that "benzoin is used in the preparation of paregoric elixir, and of court plaster, and also in the cosmetic called virgin's milk."

There can, then, be no doubt that the styraceæ are interesting, and contain active remedial agents; so much so that, however much fashion may change, they will still keep a firm hold in domestic medicine.

CONTAGIO-INFECTIOUS PLEURO-PNEUMONIA.

By W. Alleyne Cox, M.R.C.V.S. Dublin.

To my last article upon this subject, published in the April number of your Journal, was attached an editorial criticism stating that my description of the *fomes* and their various changes was purely imaginary. With these remarks I purpose more especially to deal at the conclusion of the subject under consideration, when I think I shall be able to show that my observations are not so hypothetical as is imagined.

But to continue my subject. I had entered upon the *causes* of this malady, and had stated that it had become localised—indigenous—capable of spontaneous development, frequently occurring without the influence of contagion. I had also stated that much disease was doubtless the result of contagion, and to this subject we will revert. As the law is in force in this country for slaughter and compensation, there cannot be much disease spread by outbreaks in our home herds; but this law does not extend to Ireland, and it will be proved that until the system followed out in that country is materially changed we must expect to have diseased animals from thence. It has been a custom, without any satisfactory proof, to attribute all violent outbreaks of pleuro-pneumonia to contact with recently imported Irish cattle. This is not just.

A few words here may be said in favour of Irish stock. Less disease exists throughout the country than in England, though I know that in large towns and in the immediate vicinities many cases occur of which the authorities know nothing; and naturally, if the disease appears, the animals which have been in contact are disposed of, and in all probability are sent to England. They exhibit at the time no trace of disease, but it may be latent, ready to break out at the end of weeks, and before the owner discovers its true nature it may have infected many animals in the herd. Who are to blame in this matter? Not the owners; it would be absurd to imagine that they will sacrifice themselves for the good of the country. They follow the natural instinct of self-preservation.

Nor is it the fault of the Veterinary Department, for many of these cases are kept so secret that the inspectors are unable to find them; although the removal of restrictions, and allowing such animals that have been in contact with diseased ones to be sold at the end of three weeks, is a mistake that renders nugatory anything else that may be done.

The fault lies in the law, in not extending to Ireland the slaughter and compensation clause.

Mr. Chambers, inspector in the Irish Veterinary Department, has recently visited Norfolk to elucidate the contagion question; but, looking at a transcript of his report, I find the subject *in statu quo*. He fails to enlighten us upon any point; nor would it have been judicious on his part, as a member of the Department, to have been determinate in the investigation, as by so doing he would have exposed the great defect that exists, the very loophole, so to speak, *by which animals with the disease latent in their system may be introduced into England; and as this is through open disregard of the law made and provided*, it would have been a most serious reflection on the Department.

The defect is in allowing animals that have been in contact with those affected with disease to be shipped to England. This stultifies every measure of inspection, rendering it a nullity and a sham; the law provides that they shall be seized, but inspectors are instructed not to take action upon it.

I will illustrate this. If an inspector seizes an animal upon the quay suffering from pleuro-pneumonia, it is quarantined; but the remainder of the herd are allowed to be shipped, whether from the same farm or the same lair; nor, as far as I am aware, is any investigation made that the disease may be traced to its source.

I find that Mr. Chambers very conveniently fixes the average incubative or latent period as three weeks; this *just agrees* with the period of restriction, but when speaking of the symptoms I shall show the fallacy of this statement.

In Mr. Chambers' report he further suggests a "series of well-conducted (?) experiments." This, I take it, is a hint to the Government to entrust such an investigation in the hands of his Department, when, I suppose, they are sure to be well conducted.

If they received the care and attention that is given by them to animals quarantined, the results would be singular, if not instructive.

There can be no doubt that the excitement of driving to fairs, railway transit, and sea passage, collectively, act as developing agents of the disease, and will in some peculiar conditions produce it, but I think not to the extent inferred by Mr. Chambers; or even did these causes produce all the cases of disease that have recently occurred amongst imported stock, it would not justify the authorities in abrogating the law, especially when by so doing they would nullify every benefit that may accrue from their other labours.

When on the staff I mentioned that animals that had been "in contact" should not be allowed to be shipped, but I was told that it would cause "bother." I hold that this was no reason why the law should not be put in force; but, to prevent individual and unjust pressure, I would compensate for the loss either from actual disease or detention. But it might cause more "bother" to the Department in another way. If they seized an animal and certified it to be a case of disease, and detained those in contact, and found that their diagnosis was wrong, then there would be "bother;" and I think it is in reference to this that no action is taken.

Animals with the disease latent often look blooming in condition up to its very outbreak; they feed well, improve in condition, and, if dairy cattle, milk well.

It is a matter of inquiry, and frequently perplexing, to know at what period of the disease cattle are capable of propagating it. This depends on various causes—the character of the attack, the rapidity of final development, the duration of the latent period, and the strength of the animal.

(*To be continued.*)

CORRESPONDENCE ON PARASITES.

Letter from Dr. Cobbold.

To Professor Simonds.

Dear Sir,—In reference to the very large amount of correspondence with which I am favoured on the subject of Entozoa, will you permit me to say to our readers that, whilst I am perfectly willing to make every acknowledgment (so far as I am able, and after my own fashion) of the various facts, suggestions, and specimens kindly communicated to me from time to time, I cannot undertake to make individual replies to *all* who thus honour me with their opinions and questionings.

In a letter recently received from a member of the veterinary profession in Canada I am requested in the pages of the *Veterinarian* to "relieve his painful ignorance upon the subject of the four kinds of lamb disease produced by parasites." These affections, as the writer correctly points out, were incidentally alluded to in my article on epizooty in the horse (April No., p. 238).

One or two correspondents have written to me for information about parasites, at the same time annexing conditions which imply that they wish to utilise the knowledge so obtained without stating the source whence it came.

All this evidence of interest taken in the subject is, of course, very gratifying; but, as obtains in the case of my Canadian friend, the actual information thus frequently desired is just of that very humble order which it is both my privilege and prerogative to communicate yearly to our pupils at the Royal Veterinary College.

As far as in me lies, I am only too glad to give publicity to all such communicated data as I conceive to be really subservient to the advancement of medicine and veterinary science. Further than this I cannot go. If other veterinary schools, at home or abroad, do not (as my Canadian friend more than hints) supply all the information on parasites and parasitic diseases which the rising generation so appreciatively desires, I can but express my regret that it should be so.

I embrace the present opportunity of thanking friends and others who have already contributed specimens of entozoa collectively representing upwards of 100 species.

I am, dear sir, yours very truly,

T. Spencer Cobbold.

42, Harley-street, Cavendish Square;
September 23, 1875.

VETERINARY TITLES.

By "Observer."

Sir,—With all respect to "Mackcam's" opinion with regard to the initials M.R.C.V.S.L. and E., I must beg to differ from him. It is, I think, understood that no such institution exists as a Royal College of Veterinary Surgeons of London. That the offices of the College are in London we all know to be the fact. I, and a host of other members of the profession, have ignored the letter L. generally, not believing it to be correct, but, when employing it it *any* way, it should indicate the school we hailed from. This appears to me to be the more correct interpretation.

Suppose a school were established at New York, and incorporated with the R.C.V.S., it would sound strange for a man residing there, educated and passed there, to inform the public he was a member of the R.C.V.S. London, and yet he had never crossed the Atlantic, nor had ever gone a dozen miles away from his residence.

I repeat it would appear singular, and the same remark, in my opinion, holds good in reference to the question mooted.

Again, could a London man write *Edinburgh* after his

name? Doubtless, when a young V.S. has painted on the walls of his house, I....., Veterinary Surgeon, London and Edinburgh, D.P., he intends to make the public believe that he has a double qualification. It is, to write plain English, a *falsification*, and should be put a stop to. These words are seen by me almost daily.

Further, men holding certificates of the Highland Society style themselves, not only veterinary surgeons, but actually write M.R.C.V.S.E. to their reports. Is it not remarkable that the advertisement contained in the *Veterinary Journal*, "Royal Veterinary College, Edinburgh," should appear in the *Veterinarian* as "Veterinary College, Edinburgh?" I was all along of opinion that the word "Royal" was assumed. It is notorious that men educated in Scotland have a large share of brass!

IMPORTANT TO ALL THE PROFESSION—THE TITLE OF M.R.C.V.S.

By "An Observer."

Gentlemen,—As a resident veterinary surgeon in Lincolnshire, and taking in the *Stamford Mercury*, I happened to see in the number for August 21st, in the marriage list, the following announcement:

"At Camton Church, on the 5th inst., Charles Benjamin Chapman, M.R.C.V.S., son of John Chapman, Gainsborough, to Emma Millicent, eldest daughter of George Pindar, of Camton Common."

I need hardly say that Mr. C. B. Chapman is an unqualified practitioner, and that he holds no certificate of any description whatever. Upon reading the above I was simply amazed, and I think I am in duty bound to the other members of the profession, and also to the young aspirants of the profession, to expose this matter, which undoubtedly ought to be taken up.

I wrote to Professor Simonds, sending him a copy of the advertisement, and received this reply:

"Royal Veterinary College, Camden Town.

"Dear Sir,—Your letter is one which should have been forwarded to the Secretary of the Royal College of Veterinary Surgeons, and I have sent it on to him. The matter must be dealt with by the Council of the College. It is one which the authorities of this Institution have nothing whatever to

do with. The adoption of this title is an infringement of the charter granted to the profession, not of the one possessed by the Royal Veterinary College.

"I am, yours faithfully,

(Signed) "JAS. B. SIMONDS."

This, I hope and trust, will call the attention of the Council, who ought not to lose sight of a matter of so serious a nature as this. For instance, I have a son who in due course, all being well, will aspire to be a M.R.C.V.S., but I undoubtedly will strongly protest against his becoming a qualified member of the profession if he can adopt this title without a diploma. I consider the time and money expended in acquiring a diploma, which, when thoroughly looked into, is of so little use and importance to all its members, to be thrown away, if there be no power to prevent this.

In conclusion, I beg merely to state that after this exposure, provided it cannot be prevented, it is a perfect fallacy for any young man to bind himself for two, three, or four years with a M.R.C.V.S., and pay a heavy premium, thence go to college, pass a preliminary examination, followed by college fees, &c., and other examinations. I write this short note to show how we stand, and hope it will be contemplated by every member of the profession. I consider that it is quite sufficient for an unqualified man to assume the title of Veterinary Surgeon, without being further tolerated to adopt that of M.R.C.V.S.

Pathological Contributions.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"RETURN of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the month of August, 1875, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

"Also, whether the Foreign Ports from which the Animals are brought are in Scheduled or Unscheduled Countries, and the Number of Healthy Animals brought in the same Vessels with the Diseased Animals, and the mode in which such Healthy Animals have been disposed of, whether by slaughter or otherwise.

SCHEDULED COUNTRIES.

Ports in Scheduled Countries from which brought.	Ports in Great Britain to which brought.	Disease.	Diseased Animals. Number of Diseased Animals. Cattle.	Sheep.	Goats.	Swine.	Total.	Disposal.	Healthy Animals.* Number of Healthy Animals brought in the same Vessels with Diseased Animals. Cattle.	Sheep.	Goats.	Swine.	Total.	Disposal.
Antwerp . .	London . . .	Sheep-Pox . .	...	†1	...	...	†1	Slaughtered under the instructions of the Privy Council.	...	...	...	...	...	
,,	,,	Foot-and-Mouth	27	35	...	...	62	Ditto	354	967	...	...	1321	Slaughtered under the instructions of the Privy Council.
Boulogne . .	,,	,,	...	...	...	65	65	Ditto	...	...	...	55	55	
Bremen . . .	,,	,,	...	9	...	...	9	Ditto	...	418	...	...	418	
Cherbourg . .	Southampton .	,,	...	...	...	32	32	Ditto	...	...	...	716	716	Ditto
Hamburg . .	Hartlepool . .	,,	7	...	...	3	10	Ditto	125	120	...	21	266	Ditto
,,	Hull	,,	36	...	...	...	36	Ditto	352	188	...	...	540	Ditto
,,	London . . .	,,	7	5	...	...	12	Ditto	107	1601	...	...	1708	Ditto
,,	Middlesborough	,,	8	...	...	...	8	Ditto	29	33	...	...	62	Ditto
Havre . . .	London . . .	,,	66	...	...	...	66	Ditto	202	...	...	...	202	Ditto
Total Diseased Animals .		Sheep-Pox . .	...	1	...	...	1	Total Healthy Animals .	1169	3327	...	792	5288	
		Foot-and-Mouth	151	49	...	100	300							
		Total	151	50	...	100	301							

* 'Healthy Animals' means Animals which were not found to be diseased on inspection on landing.

† This Sheep was brought in the same Vessel with other Animals affected with 'Foot-and-Mouth' Disease.

UNSCHEDULED COUNTRIES.

Corunna . .	London . . .	Foot-and-Mouth	31	...	...	...	31	Slaughtered under the instructions of the Privy Council.	79	...	...	...	79	Slaughtered under the instructions of the Privy Council.
Harlingen . .	Hull	,,	...	...	...	2	2	Ditto	171	2	...	23	196	Ditto
Oporto . . .	London . . .	,,	57	...	...	...	57	Ditto	161	...	...	...	161	Ditto
Rotterdam . .	Grimsby . . .	,,	...	...	...	3	3	Ditto	...	...	...	7	7	Ditto
,,	Hull	Pleuro-pneumonia	1	...	...	...	1	Ditto	8	...	...	...	8	Ditto
,,	,,	Foot-and-Mouth	2	...	...	...	2	Ditto	77	...	...	...	77	Ditto
,,	London . . .	,,	22	29	...	798	849	Ditto except 11 pigs which died at the place of landing.	402	13827	...	1867	16096	Ditto
Seville . . .	,,	,,	14	...	...	...	14	Slaughtered under the instructions of the Privy Council.	47	...	...	...	47	Ditto
Total Diseased Animals .		Pleuro-pneumonia . . .	1	...	...	...	1	Total Healthy Animals .	945	13829	...	1897	16671	
		Foot-and Mouth	126	29	...	803	958							
Total			127	29	...	803	959							

* 'Healthy Animals' means Animals which were not found to be diseased on inspection on landing.

"Veterinary Department, Privy Council Office, September 9th, 1875." "ALEXANDER WILLIAMS, *Secretary.*

CATTLE PLAGUE.

It is reported that cattle plague prevailed during the last month throughout the whole of the kingdom of Poland. The infected localities are so numerous that a very serious destruction of horned stock has been necessary as a measure of precaution.

Cattle plague is said to have been introduced in Croatia by cattle which were brought in by refugees from Bosnia and Herzegovina.

PLEURO-PNEUMONIA.

This disease maintains its ordinary rate of prevalence in this kingdom and on the Continent. An outbreak of the malady is reported to have occurred in Fribourg, Switzerland, but no details have been furnished.

FOOT-AND-MOUTH DISEASE.

Foot-and-mouth complaint has made extensive progress within the last few months, and is now existent all over the kingdom. We learn that in Ireland the affection has assumed a very virulent form and the outbreaks have reached as many as three hundred per day. The following details of the spread of the disease are collected from various sources:

In Kent the total number of cases is 4426. In Dorsetshire there are 16,080 animals, against 15,445 in the preceding week. Shaftesbury cattle market has been closed in consequence of the prevalence of the disease. The malady is also largely prevalent in the adjoining county of Somerset. Nearly 1300 head of stock are suffering in the district extending from Nether Stowey to Halse in the Western division of the county. In Wiltshire 169 parishes are still proclaimed infected places, and the epidemic has considerably extended since the previous weekly return. In Gloucestershire, according to last week's returns, 11,095 animals are suffering. There were 5772 fresh attacks during the week, and 2104 recovered. About 30 animals died. Among the remedies tried is that of feeding the stock on cabbage leaves. Several local farmers speak of its succeeding admirably. The leaves are cool and refreshing, and the cattle eat them with avidity. At Cheltenham, on Thursday, two farmers were fined 40s. each for moving animals suffering from the

disease along a public road. At Oxford the weekly return to the local authority up to the 11th inst. shows that, during the past week, the fresh attacks numbered 2277 cattle, 2403 sheep, and 358 pigs. One cow has died and another and a pig were killed; 899 beasts, 1190 sheep, and 121 pigs had recovered. There still exist in the whole county 405 infected farms, including 140 fresh outbreaks, comprising 4693 cattle, 4883 sheep, and 471 pigs diseased, against the previous weekly return of 3328 cattle, 3682 sheep, and 457 pigs, and 314 infected farms. The disease is rapidly spreading in the agricultural districts of Staffordshire. The number of localities in which the disease has made its appearance is 350, and the number of animals afflicted is roughly estimated, in the absence of any official return, at 1500. There have been 83 fresh outbreaks within the last seven days. The disease continues to rage, with an increased number of attacks, in Cambridgeshire and Huntingdonshire. This week's returns from Cambridgeshire give a total of 203 farms, 1444 cattle, 1039 sheep, and 212 swine, showing an increase of 44 farms, 573 cattle, 86 sheep, and 18 pigs in the Cambridge division of the county. Huntingdonshire shows, as compared with the previous week, an increase of 45 farms, 61 cattle, a decrease of sheep by 109, and of swine by 37. There has been one death less. In East Sussex the weekly report shows a large decrease in the number of animals affected as compared with that of last week. The disease is still very prevalent in the Hailsham division, which has shown the largest figures throughout, the present return giving 1866 cattle, 2033 sheep, and 22 swine as being affected therein. The totals for the 11 divisions of East Sussex in which the disease now prevails are—cattle, 2039; sheep, 3492; swine, 75. In the previous week they were—cattle, 3282; sheep, 4811; swine, 32, showing a total decrease of 1626. The most noticeable decrease is that among sheep in the Lewes district, viz. from 2214 to 1320. In Norfolk the number of attacks recorded was 3295, as compared with 3242 in the week ending August 28, 1884 in the week ending August 21, and 2456 in the week ending August 14. The number of cases of sheep scab reported in Norfolk in the week ending September 4 was 420, as compared with 510, 18, and nil in the three previous weeks respectively.

Foot-and-mouth disease had been unusually prevalent throughout Aberdeen, there having been no fewer than 561 centres reported to the police within the past two months. The total number of cattle kept at these centres is 14,000, and of that number about three fourths were affected. The

disease is still spreading, 166 centres having been reported during the month.

Foot-and-mouth disease is more prevalent among cattle and sheep in the Newbury and Hungerford districts of Berkshire than it has been for several years past, and fresh cases are reported almost daily. The returns of Superintendent Bennett, of Newbury, the district inspector, show that considerably over 1000 sheep and a large number of beasts are affected. There have been two convictions lately at the County Petty Sessions for driving cattle affected with the disease along the public roads. According to the latest returns, the 147 farms proclaimed in the whole county of Oxford represent 1227 beasts, 1682 sheep, and 163 pigs, making a total of 3072 head of stock diseased. On one farm five sheep are affected with scab. The most notable increase of the epidemic has occurred in the Bullingdon Divison, including Thame, which, on the 14th inst., contained 27 infected farms, with 176 cattle, 173 sheep, and 3 pigs. The numbers on the 21st were augmented to 378 cattle, 260 sheep, and 46 pigs. A case terminating fatally is, however, of very rare occurrence.

The latest reports from various districts of the country continue to show, almost universally, an increase in the foot-and-mouth disease. Meetings are being held with the view of consulting as to the best means to be adopted to abolish or lessen the ravages of this unfortunate scourge. The following accounts give a recent aspect of the malady in some of the places most affected:

In Oxfordshire the police returns up to the 18th inst. show that there are at present diseased in the whole county on 516 infected farms 5292 cattle, 5520 sheep, and 714 pigs, against the last weekly return of 4693 cattle, 4883 sheep, and 471 pigs, since which there had been fresh outbreaks on 163 farms, comprising 2249 cattle, 3208 sheep, and 436 pigs. Nineteen beasts, three sheep, and 43 pigs had died, and 1621 cows, 2573 sheep, and 150 pigs had recovered.

In Dorsetshire a return issued last week gives 3463 cattle, 11,974 sheep, and 643 swine suffering from the infection, being a total of 16,080, as against 15,445 in the preceding week. Indeed, so great is its prevalence in this county, that Shaftesbury market has been temporarily closed. In Staffordshire the disease has been reported from 350 different localities, and an unofficial estimate gives 1500 as the number of animals suffering. In the Western Division of Somerset nearly 1300 cattle are affected. In Wiltshire 169 parishes are still proclaimed, and there has been an extension of the

epidemic since the latest official report. In Gloucestershire there are 11,095 animals that have been attacked. In Norfolk, for the week ending Sept. 4th, the number of attacks recorded was 3295, compared with 3242 in the week ending August 28th, 1874, in the week ending August 21st, and 2456 in the week ending August 14th.

In North and East Yorkshire the disease is rapidly spreading, and is now reported as existing in the Malton, Buckrose, Ryedale, Pickering, Lythe, and east and west divisions. The report for the Malton division on Saturday showed four fresh farms infected, and in the Buckrose (East Riding) district there were nearly 20 fresh outbreaks, comprising 100 head of cattle, 150 sheep, and 3 pigs. The farmers are desirous of having the local markets closed.

In Devonshire, up to the end of last week, 91 outbreaks of foot-and-mouth disease had been reported in the Taunton division of the county, affecting 700 cattle, 870 sheep, and 114 pigs.

In Pembrokeshire the foot-and-mouth disease has appeared amongst the cattle in the hundred of Castlemartin. It has been traced chiefly as due to cattle and sheep imported from Ireland. Stringent measures have been taken by the county constabulary to endeavour to prevent the further spread of the disease.

In Bedfordshire the disease prevails on 230 farms, the total number of animals suffering being 3918, of which 2236 are cattle, 1381 are sheep, and 301 are swine.

In Kent the disease is greatly on the increase. The returns which have just been made show that the total number of cases has reached the high figure of 5473, which are distributed as follows:—Ashford division, 158; Bearsted, 39; Bromley, 308; Cranbrook, 312; Dartford, 506; Elham, 16; Faversham, 352; Sittingbourne, 412; Home (Canterbury), 1047; Malling, 463; Ramsgate, 28; Rochester, 12; Sevenoaks, 538; Tunbridge, 412; Tunbridge Wells, 218; Wingham, 652. The returns for the three previous weeks were respectively 4426, 3735, and 2991.

In East Sussex the weekly returns issued yesterday show a considerable decrease in the number of animals suffering as compared with the previous week. A slight increase, however, is shown in the number of swine, namely, from 75 to 96. The number of cattle is 2568 as against 2939 sheep; 2428 compared with 3492. Of the eleven divisions in the district, Hailsham continues to return more than half the total number, viz. cattle, 1417; sheep, 1327; swine, 2. Even these figures compare favorably with last week, show-

ing a total reduction of 1175 in this division, viz. 449 cattle, 706 sheep, and 20 swine. Last week the number of sheep returned in the Lewes division was 1320, the present number is 908. The total number of cases reported this week is 5092.

In Warwickshire the returns for the week ending Saturday last show that there has been an increase of upwards of 700 cases since the former weekly report. At Brailes the number increased from 1632 to 2108, while at Coleshill there was a decrease from 1993 to 1164. At Atherstone, Southam, and several other places, the disease was on the increase. The figures for the week are as follows:—Coleshill, 1164; Brailes, 2108; Atherstone, 1015; Henley, 32; Stratford, 71; Snitterfield, 271; Birmingham, 185; Solihull, 395; Kineton, 485; Kenilworth, 479; Kirby, 763; Rugby, 166; Southam, 783—total, 8785. There is also a case of pleuro-pneumonia at Coleshill, one at Daventry, and 31 cases of sheep scab at Kirby. The local authorities are very vigilant in their efforts to keep the disease from spreading. At Coventry the Public Cattle Sales' Company have postponed the holding of their sales on account of the disease.

In the county of Cork the disease has broken out at Ballygiblin, which is about four miles from Kanturk.

Among the means of prevention the closing of fairs and markets has been suggested at various public meetings; the proposition, however, has not been supported by farmers, and without such sanction it is not likely to be adopted.

A correspondent who has had considerable experience in Ireland writes as follows:—"I hear very bad accounts of the cattle disease in Ireland, especially in Meath, Westmeath, and Fermanagh. I am of opinion that the only measure to counteract the undoubted exportation of diseased animals is *quarantine*. It is a common practice with Irish owners, in the event of an outbreak of disease on their premises, to sell for exportation all the animals that will 'pass muster.' The outbreak of the disease is then, after the lapse of a few days, reported to the constabulary; but, in the meantime, the exported stock which are generating the disease are, according to existing arrangements, freely dispersed through the English counties."

Facts and Observations.

THE CRUELTY QUESTION.—The special correspondent of the *Daily News* sends a telegram, dated from Florence on the 8th ultimo, to the following effect:—"At the Veterinary Congress to-day Signor Magliani, the President of the Society for the Protection of Animals, acknowledged that veterinary surgeons were the true champions of the quadrupeds. He declared that ill-treatment was the cause of deterioration in the races of animals, and was a bad example to public morals. He called for a vote of censure from the Congress on the promoters of cruelty to animals. Signor Peruzzi encouraged the Congress to advise the producers of animals to cultivate veterinary art."

TRICHINOSIS.—A serious outbreak of trichinosis is stated to have taken place in Dresden, where an officer, 40 sub-officers and privates, and several civilians are suffering from the disease. The municipal authorities have issued a warning against the consumption of half-raw pork. The malady also is reported to have broken out in the neighbourhood of Lobau.

REMARKABLE ACCUMULATION OF NAILS, &C., IN THE INTESTINES OF A HORSE.—The *Liverpool Courier* of September 13th states that the other day Mr. C. W. Hodgkinson, horse-slaughterer and grease-manufacturer, received at his works, near Sandhills station, a horse which had just died from an obstruction in the bowels. On a post-mortem examination Mr. Hodgkinson discovered in the colon the following articles:—Eleven hundred nails ranging from about half to an inch and a half in length, a quantity of small screws, buttons, curtain-hooks, and other miscellaneous items of a hardly less digestible kind. It is not known how the horse obtained such appetising morsels, but probably from often feeding in close proximity to a nail manufactory or an ironmonger's establishment. That the foreign ingredients had been in the poor beast's intestines for a considerable period is proved by the fact of their having been worn smooth and thin by the friction to which they were subjected. It appears that Hodgkinson has preserved the nails, screws, curtain-hooks, &c. for the inspection of the incredulous.

THE VETERINARIAN, OCTOBER 1, 1875.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

THE ANTISEPTIC TREATMENT.

IN the last number of the *Veterinarian* the subject of internal disinfection was introduced by Professor Axe in special reference to the action of *sodium sulpho-carbolate* which has been successfully employed by Dr. Brackenbridge, Assistant Physician to the Royal Infirmary, Edinburgh, in cases of scarlet fever. Reference was also made to the use of carbolic acid, which Mr. Priestman has found to be effectual in retarding the development of foot-and-mouth disease, and sometimes even rendering the system altogether insusceptible to the action of the contagium.

The precise value of disinfectants and antiseptics in arresting the action of virus has yet to be determined, but there are sufficient facts to form the basis of a series of investigations which would lead to interesting, if not profitable, results. No novelty attaches to the idea of destroying the activity of *contagium* either within or without the animal body, but the theory that the poison of disease may be neutralised has never been generally sustained, and the experiments which have tended towards its proof have not received so much attention as they deserved. Many years ago, we believe Professor Bouley gave horses carbolic or phenic acid and found that the agent rendered them insusceptible to the influence of the matter of glanders. In 1866 Mr. Crookes tried many experiments with various disinfectants on animals which were affected with cattle plague or which had been in contact with animals so affected. Carbolic acid was one of the agents which were most successful in moderating the action of the *contagium*. The acid was administered internally, in the form of vapour, and also by injection into the veins. By the latter method six ounces of solution containing 105 grains

of pure acid were introduced into the jugular vein of a cow at one operation without causing any serious disturbance. Animals whose systems were impregnated with carbolic-acid escaped infection for some considerable period, but they succumbed when removed from the protective influence of the agent.

Chloroform was also tested in several parts of the country as a curative and preventive of cattle plague with varying results; it was clearly shown in the course of the experiments that the inhalation of chloroform produced a marked but temporary amelioration of symptoms, and its continued use retarded the progress of the disease.

In Mr. Priestman's cases the hypodermic employment of chloric ether had some effect in moderating the severity of the disease.

Altogether there is a perfectly clear case in favour of the use of antiseptics both as curatives and preventives. The prevalence of foot-and-mouth disease in all parts of the country offers every opportunity for thoroughly testing the action of the various agents which have been recommended for the purpose of rendering the system of an animal proof against the poison of disease.

We hope that the profession will not let slip so favorable an opportunity of throwing further light on this important subject.

Extracts from British and Foreign Journals.

MEDICAL MICROSCOPICAL SOCIETY, May 21st, 1875.

Dr. F. Payne, President, in the chair.

FATTY DEGENERATION OF MUSCLE.

Notes on this subject were read by Dr. Kesteven. He observed that the expression "fatty degeneration," as usually employed, was a misnomer; that the change is one in which, as a matter of fact, fat plays no part at all. Instead of fatty matter, the degenerated muscles exhibit a disintegration of the contents of the muscle-fibrils, obliterating their striation. Along the centre of these are to be seen dark-brown or black granules of a pigmentary character, not removable by ether or alkalies. The change begins and ends in the fibrils, and is very distinct from the fatty condition, in which the fibrils retaining their striation are separated by deposition of adipose tissue. The latter form of disease is more or less associated with changes in the nervous centres, while in the former it is not so. Preparations and illustrative drawings were exhibited by the author, of muscular atrophy, pseudo-muscular hypertrophy, rupture of the left ventricle, infantile paralysis, and the so-called fatty degeneration.

The President and several of the members took part in the discussion that followed.

MYELITIS.

A paper on this subject, by Mr. D. J. Hamilton, was read by the President. The author pointed out that much uncertainty existed as to the real character of the various lesions of the spinal cord, known as hardening, softening, sclerosis, disintegration, &c., and more especially as to their connection with the secondary changes depending on loss of the trophic influence by nerve-cells on the fibres to which they are attached; and as to their connection with inflammation.

In order to elucidate the latter point, it was necessary to know definitely in the first place what changes inflammation does produce in the spinal cord; and with this end the author made the experiments recorded in his paper. His

method consisted in first producing a lesion known to be inflammatory, and then examining the morbid appearances, all preconceived ideas on the subject being purposely laid aside. All appearances were verified by abundant repetition, and only those which were found to be invariable were recorded. The experiments were conducted in Professor Stricker's laboratory at Vienna. The method of experimenting was—a small animal, as a cat, having been narcotized, the spinal cord was cut down upon at the junction of the dorsal and lumbar portions, and a thread passed through for about an inch in a longitudinal direction. The wound was now closed, and the animal killed after forty-eight hours, by which time inflammation was abundantly set up. The cord was then cut up into pieces an inch long, hardened in chromic acid and spirit, and kept at a low temperature. Sections were made in a microtome, stained with carmine and mounted in dammar.

When examined, the tissue at the seat of lesion was found broken down, and showed numerous extravasations of blood; but the true inflammatory area was seen at a little distance from this, being generally most marked in the deepest portions of the anterior columns and in the commissure. Changes were seen in the nerve-tubes, the nerve-cells, and the neuroglia.

In the *nerve-tubes* the most remarkable changes were seen in the axis-cylinder, this being dilated at irregular intervals into large oval swellings, from five to ten times its normal diameter, still contained in the distended and attenuated nerve-sheath, and composed of a transparent substance, deeply stained by carmine. These oval swellings were sometimes connected together by the unaltered axis-cylinder, sometimes detached. In many of them evidence was seen of fissiparous division, groups of smaller though similar transparent bodies being produced, which appeared to spread beyond the original but now empty nerve-sheath, and to invade the surrounding tissues, being then identical with the so-called "colloid bodies" abundantly met with in chronic affections of the spinal cord.

In the seat of most intense inflammation the bodies underwent a further and more remarkable development, becoming granular, and several nuclei being formed in their interior. The corpuscles then presented the appearance of mother-cells, and in some cases these mother-cells were broken down, and the young cells in their interior were set free as pus-corpuscles.

The changes in the *nerve-cells* were less important, con-

sisting chiefly of swelling and molecular transformation, a condition often described as an œdematous affection. In no case was division of the nerve-cells observed.

The *neuroglia* was less altered than might have been expected, but in many instances abundant nuclei were seen, the origin of which was obscure.

Abundant evidence was seen of the emigration of leucocytes from the blood-vessels, the adventitious sheaths being filled with them, as in inflammation of other parts. Similar appearances were seen in a case of syphilitic disease of the nerve-centres.

After a brief discussion on the paper, Mr. Groves described and exhibited Crouch's improved fine adjustment for microscope stands, made on the Continental model, in which great stability was combined with easy and regular motion, the points of friction being reduced to a minimum. He also described a centering sub-stage arrangement for the same stand.—*Microscopical Journal.*

REMARKS ON THE ANATOMY AND PATHOLOGICAL RELATIONS OF A NEW SPECIES OF LIVER-FLUKE.

By J. F. P. McConnell, M.B., Professor of Pathology and Resident Physician, Medical College, Calcutta.

On the 9th of September, 1874, I made a *post-mortem* examination of the body of a Chinaman, and found in the liver, obstructing the bile-ducts, a large number of "flukes." A careful examination of these, and comparison with other known distomata, have convinced me that they not only differ from the ordinary liver-fluke (*Dist. hepaticum*), but constitute an entirely new species. I desire therefore to describe the salient anatomical characters of these flukes, then to give a brief account of the *post-mortem* examination alluded to, and lastly to make a few remarks upon the case.

The woodcuts which accompany this paper will facilitate the description. Fig. 1 represents a few of these flukes drawn to natural size. Fig. 2 is one specimen enlarged to about six times the natural size, showing the ventral surface. Fig. 3 represents the ova magnified 300 diameters.

The body is narrow, flattened, lanceolate; the central portion being the broadest part of the animal, the anterior

and posterior extremities tapering and pointed, the former, however, being much narrower than the latter, which is more

Fig. 1. *Ad. Nat.*

Fig. 2. × 6.

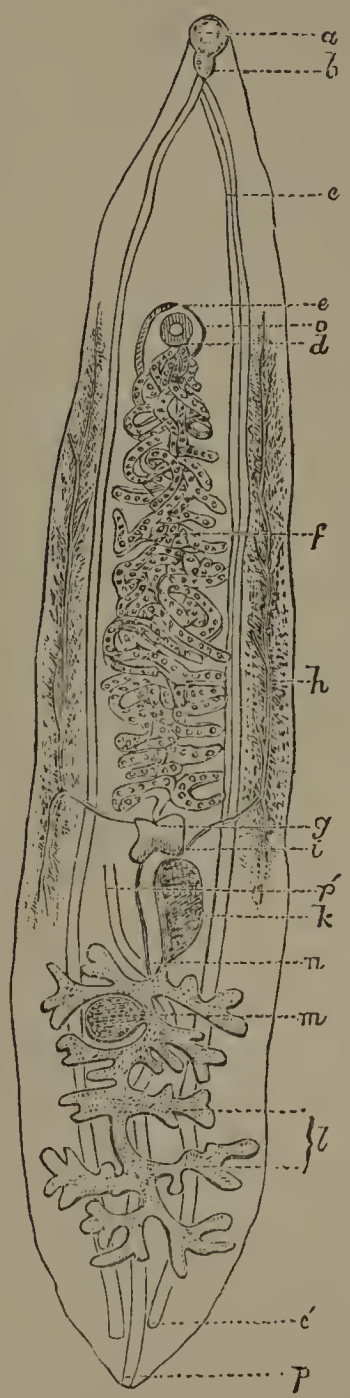

Fig. 3. × 300.

Fig. 2.—*a*. Oral sucker. *b*. Œsophagus. *c*, *c'*. Right alimentary canal. *d*. Ventral sucker. *e*. Genital orifice. *f*. Uterine folds. *g*. Ovary. *h*. Vitelligene gland (right). *i*. Vitelligene duct (right). *k*. Right testicle. *l*. Receptaculum seminis (?). *m*. Left testicle. *n*. Vas deferens. *o*. Termination of vas deferens. *p*. Pulsatile vesicle. *p'*. Water-vascular canal.

strictly ovate. The surface of the body is smooth, quite free from hairs or spines even in the fresh condition. The borders have a slightly undulating outline. At the anterior extremity (Fig. 2) is situated the oral sucker (terminal), *a*—a hollow

disc, provided with a well-defined sphincter. At the bottom of this cup-like cavity is the mouth; this leads into the pharynx, *b*, (which is circular or slightly oval-shaped, and is probably muscular), and thence into the œsophagus. The œsophagus bifurcates in the median line of the body (a little distance above the ventral sucker) into two alimentary canals, *c*, which diverge as they pass downwards and outwards along the sides of the body, slightly widening as they proceed, and converge again towards the caudal extremity, close to which they terminate in blind cul-de-sacs, *c'*. These canals are unbranched throughout. On the inferior surface of the body is the ventral sucker, *d*; situated in the median line, and about $\frac{1}{6}''$ (one sixth of an inch) below the oral sucker. It is imperforate, and provided with a sphincter, the radiating fibres of which can be clearly distinguished. This sucker is slightly smaller than the oral, measuring $\frac{1}{3\,4}''$, whereas the latter is $\frac{1}{2\,5}''$

Just above the ventral sucker is a minute dark dot, *e*, which appears to be the genital orifice. No penis or penis-like appendage can be detected, but ova have, in several specimens, been seen to assume a linear arrangement between the little orifice just mentioned and the hollow ventral disc into which they have dropped. Opening into this genital orifice, in favorable specimens, can be traced the delicate tubular termination of a convoluted uterine tube. This structure is highly developed, and consists of a series of very intricate windings, *f*, which communicate posteriorly with a flattened, somewhat square-shaped body, the ovary, *g*. The uterine tubules are semi-opaque, but in the more transparent portions numerous ova are seen collected together within the folds. The uterus and ovary occupy rather more than the middle third of the animal.

Occupying the interspaces between the alimentary canal and the lateral borders of the body on either side are the dark, pigmented-looking structures, the vitelligence structures, *h*. These communicate with the ovary by two delicate canals, which run transversely inwards to it, and constitute the vitelligene ducts, *i*.

Placed a short distance behind the ovary is a large oval-shaped body, the testis, *k*; which is succeeded by a remarkable and peculiar development of branched, dendritic-looking structures, *l*, among which, in several specimens, a rounded smaller testicle (*m*) can be distinguished. This apparatus appears to be connected with the male generative organs, and forms perhaps a kind of receptaculum seminis. This is the most marked and distinguishing character of this fluke. The

testes and branched receptaculum are of a rusty-brown colour, both of the same tinge,* and have granular amorphous contents; the connection, however, between this apparatus and the testes is uncertain, but, as far as one can speak from a very careful examination of several specimens, the arrangement is that which has just been briefly sketched. The position and shape of the second or smaller testicle are also very variable. In some of the parasites only one large globular organ of this kind can be discovered; in others, the position of the second testis is lower down the axis of the receptaculum; in others, again, instead of a distinctly rounded organ, a mere diffuse "blurring" of one of the branched tubes can be held to represent this second testicle.

Starting from the upper part of the male generative apparatus, a very delicate thread-like structure can be seen, *n*, which runs upwards by the side of the larger testis to the lower border of the ovary, and probably above it, but can be traced no further. This appears to be the seminal efferent duct, or vas deferens. The point at which it communicates with the female generative apparatus was not for a long time ascertained; but lately, in a specimen stained with carmine, and then *pressed* between thin pieces of glass, I have been able to discover (what seems to me the continuation of this tubule) a very delicate structure, *o*, curving round the ventral sucker on the *opposite side* to the termination of the uterine folds, and ending at the same genital orifice, or at a point very close to it, as depicted in the engraving (Fig. 2). As this tubule is a flexible elastic structure, it may very possibly run up the same side as the uterine tubule, and not occupy an opposite position; I have drawn it, however, exactly as seen in the specimen alluded to.

Lastly, at the caudal extremity of the body of the fluke may be seen a pulsative vesicle or bulb, *p*, associated with the water-vascular system of the animal; the continuation of the same upwards, in the form of a vascular canal, can be traced for a certain distance, passing above the male generative apparatus in a winding course, and being lost sight of at a short distance to the left of the right testicle, *p'*. The average length of the distoma now described is $\frac{7}{10}''$, and the breadth $\frac{1}{7}''$. The latter is very constant; the former has slight variations, viz. from $8\frac{8}{10}''$ to $\frac{6}{10}''$.

I have not observed any further marked peculiarities in the minute structure and arrangement of the tissues and

* In the diagram the engraver has made the testicles darker than the rest of the apparatus, and their contents somewhat largely molecular, but that is not correct.

organs of this particular parasite but what have been described by systematic writers on entoza; so that I refrain from adding unnecessarily to the length of this paper by giving detailed accounts of microscopic appearances already well known.

The ova are of distinctly ovoid shape (Fig. 3). A short distance from the more pointed extremity is a dark, transverse line, just as is usually seen in the ova of distomata, and indicating the line of contact of that lid-like organ or operculum, which, after a time, spontaneously separates. The average length of each ovum is $\frac{1}{833}''$, and the average breadth $\frac{1}{1666}''$; thus, roughly speaking, it is twice as long as it is broad.

The individual from whose liver these flukes were obtained was a Chinaman, aged twenty, a carpenter. He was brought into the Medical College Hospital at midnight on September 8th, 1874, in an insensible, moribund condition. The only history that could be obtained from the "friend" who accompanied him was, that the patient had been suffering from "fever" of a continued type for about a fortnight. The insensibility was profound; the pupils were normal; the conjuntivæ looked pale. There was considerable dyspnœa; a hard, tense, distended, and slightly tympanitic condition of the abdomen; a hot skin, and an almost imperceptible radial pulse. He never rallied, but died, in much the same state, two hours and a half after admission.

A *post-mortem* examination was made the next morning, five hours and a half after death, a brief summary of which is as follows:—Body fairly nourished; pupils dilated; conjunctivæ jaundiced; rigor mortis strong in the lower limbs. The dura mater yellow-stained; vessels of pia mater everywhere gorged with dark blood, slight serous effusion also into its meshes; cerebral substance moderately firm; puncta large and bleed freely; grey matter of both cerebrum and cerebellum particularly dark—a deep leaden hue, such as is met with in many of the severe remittents of this country. The large pulmonary vessels at the roots of the lungs contained much fluid dark blood, but the lung-substance everywhere else was rather pale and anæmic—structurally healthy. One ounce of deeply yellow-tinged serum was found in the pericardial cavity; a few dark clots and fluid blood in the right chambers of the heart; the left were almost empty. The peritoneum was healthy, and no effusion was found into the abdominal cavity. The liver was large, swollen, and tense; superficially of a dark-purple colour, on section paler, more dingy or muddy-looking. Its parenchyma everywhere very soft. The large portal and hepatic veins were filled

with fluid blood, and the bile-ducts particularly distinct from their large size, and distension with thick yellow bile. On incising the liver in different directions it was noticed that small, dark, vermicular-looking bodies escaped on to the table, and on more careful examination these were clearly seen to protrude from the bile-ducts, which, on being dissected, were found more or less obstructed by and containing them in large numbers, some lying free, others coiled up, and either solitary or in groups of twos or threes within the biliary ducts; all were dead. The gall-bladder was full; the cystic and cholodic ducts were patent. The bile in the bladder was of a very deep yellow (orange) colour, thick, and measured about an ounce and a half. No distomata were found in the gall-bladder, nor were any ova discovered on microscopical examination of the bile and lining membrane of this sac. Numerous ova and shreds of epithelium were found in the biliary canals. (The weight of the liver after incision was 54½ oz.) Portions of this organ were hardened, thin sections made, and examined microscopically. A most remarkable and intense pigmentation of the parenchyma was observed—not mere staining, but a positive infiltration of black pigment, granular in character, and not confined or specially distributed in the interlobular tissue, but occupying the hepatic cells also within the lobules, the greater portion being disposed in the form of minute, very dark, granular depôts, from which smaller molecules radiated in all directions as from a centre. The pigment matter appeared to be biliary rather than hæmatoid. Many of the hepatic cells were also infiltrated with fat, and the nucleus in the majority was ill defined or altogether indistinguishable. The spleen was found enlarged; its capsule stretched, slightly thickened and opaque; its substance very dark and pulpy; weight 13¾ oz. The kidneys were moderately hyperæmic and dark. The small intestines were found deeply bile-stained; the large, natural. The fæcal contents of both—partly solid and partly liquid—were bile-coloured, but no distomata were found in them, although carefully washed and examined.

Remarks.—The morbid anatomy of the liver in this case seems unequivocally to point to the presence of the flukes in its biliary ducts as the exciting cause of the acute and extensive structural degeneration of the proper structure of the organ, and of that cholæmic condition induced by the obstruction of the biliary channels which appears to have been the immediate cause of death. It is noticeable that the gall-bladder itself contained no distomata, nor exhibited

any evidences of having been occupied by them, while the bile-ducts were found densely crowded. I must have collected at least thirty specimens in my dissections, and numbers doubtless still remain in those portions of the liver which I have preserved entire, for hardly any duct of medium size has not been found to contain two, three, or more of these parasites.

The discovery of this distoma may perhaps throw some light upon the pathology of those obscure liver enlargements and jaundices which every now and then, in this country at any rate, are presented to the practitioner; and although I never met with an analogous case, yet I can recall to memory a few instances during the past three years, of Chinamen especially, many of whom are settled in this city, who have applied to me in the medical out-patient department of this hospital for the treatment of obscure, hard, massive enlargements of the liver, with or without jaundice, and in whom I am now naturally inclined to suppose that a similar cause for the disease might have existed.

The Chinese, as well as the Burmese, are well known to be "filthy feeders," delighting in putrid messes of half-raw fish, &c.; they are bound by no caste prejudices (as the natives of India are) to abstain from any kind of "flesh, fish, or fowl;" they partake, moreover, of all kinds of "vegetable food." The sources from whence the larvæ of such parasites may be derived are therefore not far to be sought. In the present instance, I regret to say, I have been unable to gain any information as to the antecedent history and habits of the deceased. The "friend" who brought him to the hospital never reappeared, and the body after death was "unclaimed." With reference, however, to this question, my attention has been directed to a paper by Professor Leidy, of America,* who reports that he had received from Dr. J. G. Kerr, of Canton, China, a worm which "was vomited by a Chinese boy, aged fifteen, and brought to him" (Dr. Kerr) "an hour and a half after its expulsion, when it was still alive. It had the appearance of a leech, and was red in colour, about an inch and a half long, and three-quarters of an inch where widest. Dr. Kerr also stated that a girl of four years, of English parents, living in Canton, passed from the bowels at one time nine of these worms. With these exceptions, Dr. Kerr had not met with any one who had ever seen or heard of anything of the kind." Professor Leidy is of opinion that this parasite is a true liver-fluke. He

* 'Proceedings of 'Acad. Nat. Sciences of Philadelphia,' Part iii, p. 364.

says, "The worm exhibits some differences from D. hepaticum as usually described, but perhaps not sufficiently to characterise it as a distinct species." The specimen had been preserved in strong alcohol, which had doubtless contracted and reduced it in size, "but it is yet larger than the size assigned to D. hepaticum. It is perfectly smooth throughout, and exhibits no trace of roughness to the integument. It is ovate-lanceolate in form, and gradually widens from the anterior to the posterior rounded extremity. The ventral acetabulum is twice the size of the mouth, and is situated about its own diameter behind it. The genital organ with the exserted spiral penis is placed just in advance of the ventral acetabulum. The measurements of the worm in its present condition are as follows:—Length, 17 lines; width at the posterior third, 7 lines; thickness near centre, 1 line; diameter of mouth, $\frac{2}{5}$ line; diameter of acetabulum, $\frac{4}{5}$ line."

With respect to the identification of the distoma found by me, I have carefully and diligently searched such works as are here accessible (works of reference being very few and with difficulty attainable in this country), especially the classical helminthographs of Dr. Cobbold,* of Van Beneden,† and of Leuckart,‡ but have been unable to find the description of any distoma which possesses the anatomical peculiarities that distinguish the one now under consideration. That it is not the ordinary D. hepaticum there can hardly be any doubt. It is more closely allied to the D. lanceolatum of Mehlis; but, apart from certain differences in size and general conformation, there are very important differences in the position and construction of the male and female reproductive organs between these two species. To enter into an account of these minutely would occupy too much space, and, moreover, does not coincide with the primary or principal object I have had in view in the publication of the history of this case. I have been moved thereto more by pathological than purely anatomical considerations; nevertheless, I think I may be able to express my impression with respect to the latter by exhibiting in a tabular form some of the more prominent differentiating peculiarities of these three distomata.§ Thus:

* 'Entozoa and the Internal Parasites of Man.'

† 'Mémoire sur les Vers Intestinaux.'

‡ 'Die Menschlichen Parasiten.'

§ I need hardly refer to the D. conjunctum of Cobbold. Although the anatomical "arrangement of parts" in this little fluke has a somewhat close resemblance to that in the new distoma, yet its size (about $\frac{1}{4}''$) precludes at once its being recognised as anything more than an allied species, and *it has never yet been found in man.*

	D. Hepaticum.	D. Lanceolatum.	New Liver-Fluke.
Length . .	$\frac{3}{4}''$ to $1''$.	$\frac{1}{3}''$ (8-9 mm.).	$\frac{7}{10}''$.
Breadth . .	$\frac{1}{2}''$ to $\frac{2}{3}''$.	$1\frac{1}{2}'''$.	$\frac{1}{7}''$.
Oral sucker .	Smaller than ventral.	About same size.	Larger than ventral.
Integument .	Covered by minute spines.	Smooth.	Smooth.
Intestinal canal.	Branched.	Not branched. Terminates at lower fourth of body.	Not branched. Extends through the whole length of body to the caudal extremity (nearly).
Male reproductive organs.	Form a series of spread-out vermiform tubes.	Form two distinct globular testes, placed one above the other in the median line *directly below* the ventral sucker.	Form one or two globular testes, occupying the lower third of the body *below* the female reproductive organs, and are connected with a very remarkable development (receptaculum seminis ?).
Female reproductive organs.	.....	Occupy central and hinder parts of body *below* the testes.	Occupy the anterior and middle third of the body *above* the testes and seminal apparatus.
Ovum . . .	$\frac{1}{180} \times \frac{1}{270}$.	About $\frac{1}{000}'' \times \frac{1}{833}''$.	$\frac{1}{833}'' \times \frac{1}{1666}''$.

In conclusion, I have to acknowledge my great indebtedness to my friend Dr. T. R. Lewis, who has afforded me much kindly assistance and encouragement throughout this research, and I would add that I intend to forward by the earliest opportunity to Professor Parkes, of Netley, a portion of the liver and several specimens of this distoma for the museum of the Royal Victoria Hospital.

Calcutta.

The New Human Fluke.

To the Editor of 'The Lancet.'

Sir,—Professor McConnell's description of another human fluke, as given in your pages for August 21st, is of such high interest to helminthologists that I trust you will permit me space enough to say a few words on the subject. Without doubt the species is new to science, and ought to have some distinctive name by which it may be recognised amongst the trematodes. I propose to call it *Distoma sinense*. The evidence adduced by Dr. McConnell in proof of the specific distinctness of his entozoon is overwhelming, and his account of the parasite's anatomical structure presents features of special import. In regard, however, to the flukes obtained by Dr. J. G. Kerr, I have no doubt that they will turn out

to be thoroughly characteristic examples of Prof. Busk's *Distoma crassum*, the opinion of Prof. J. Leidy (who so well describes the parasites) to the contrary notwithstanding. In the forthcoming issue of the *Journal of the Linnean Society* there will be a description of two more instances of the occurrence of Busk's fluke in the human subject, founded on specimens obtained from a missionary and his wife who placed themselves under the professional care of Dr. George Johnson and myself. Prof. McConnell's fluke is quite distinct from all the other human and animal trematodes at present known to science, and to this extent, therefore, the the case is unique. I am, Sir, yours truly,

Harley Street; T. Spencer Cobbold.
Sept. 2nd, 1875.

BLOOD-CORPUSCLES.

In a brief historical sketch of the mammalian red blood-corpuscles, Dr. Norris, of Birmingham, observes that these minute bodies were first seen in the year 1658 by Swammerdaux, though his observations were not published till a century later. In 1661 Malpighi published his discovery of the blood-corpuscles of the hedgehog. He erroneously regarded them as globules of fat. Leeuwenhoek, in 1673, detected them in human blood, and from this time the study of these bodies commenced in earnest. Hewson, in 1770, showed that in the normal state they were not globules, but flat bodies. Dr. Young, in 1813, inferred that they were biconcave discs, and this was demonstrated by Dr. Hodgkin and Mr. Liston in 1827. The researches of many observers, amongst whom Gulliver and Wharton Jones are conspicuous, have proved that the red corpuscles are destitute of a nucleus, that they have a diameter of about $\frac{1}{3200}$ of an inch, and a thickness of about $\frac{1}{12000}$ of an inch. The running together of the discs into rouleaux was first observed by Hewson, and first depicted by Della Torre about three years subsequently. In 1862 the nature of this phenomenon was investigated by Dr. Norris, who pointed out a form of aggregation of the corpuscles which had been overlooked by previous observers, and which he designated the tesselate mode of aggregation, and at the same time demonstrated experimentally that aggregation in both cases was dependent upon a peculiar operation of the force of cohesion. In regard to their physical constitution, whilst they were formerly regarded as vesicles, they are now considered to be tiny lumps of a uniformly viscous matter, with at most only a

pellicular covering. Their mode of origin is obscure, but is generally attributed to transformation of the white corpuscle. Dr. Norris, however, holds that, like the formless elements of the blood, these morphological elements are produced *de novo* from the food and fluids of the body; and in support of his view states, as the result of his observations, that the colouring principles associated with plants and animals, such as hematin or cruorin, chlorophyll or carmine, possess the power, under suitable conditions, of combining with protein and other substances, and to produce instantaneously, by a process of precipitation, equable-sized organic globules, which are permanent in the surrounding aqueous fluids. These morphological elements are therefore the immediate result of the mere admixture of suitable formless fluids. Hence it would appear that if in any part of the economy hæmatin and globulin come together in the presence of a third suitable organic liquid, hæmoglobin corpuscles must inevitably be produced in numbers proportionate to the amount of hæmoglobin present. This Dr. Norris believes probably occurs in the lymphatic glands, but there is no reason why it should be exclusively confined to this region.

In accordance with this view Dr. Norris remarks we have no longer to search for transition forms (which have been looked for in vain), but only for the chemical substances, the organs which elaborate them, and the regions in which they combine. This view refers to the formation of the blood as a whole almost entirely to the elements of the food.

THE TOXIC EFFECTS OF PUTREFIED BLOOD.

Some very interesting observations on the toxic effects of putrefying blood have been recently communicated to the Académie des Sciences by M. V. Feltz. Their object was to ascertain how far the toxic property could be influenced by various conditions. He first determined the effects on a healthy dog. The injection of one to three cubic centimètres caused all the symptoms of intense septicæmia, pyrexia, vomiting, hæmorrhages, and death, in from three to eight days, with pulmonary infarctions and evidence of fatty degeneration in both blood and liver. Exposure to the air for periods of 24 to 96 hours made no difference in the toxic properties of the blood; exposure to compressed air for 24 to 144 hours likewise had no influence. The microscopic characters of the blood remained unchanged, but the vibrios it contained were a little less active. The toxic effects were

the same. Exposure to oxygen had a different result, according to the time of exposure. Contact with oxygen for from 6 to 72 hours did not lessen the poisonous qualities; animals injected died as in the other cases. Those injected with blood which had been exposed to oxygen for 96 to 216 hours recovered after five or six days' illness. The exposure rendered the bacteria, &c., inactive. The result was the same with blood through which a continuous current of oxygen was passed. A very similar effect was produced by exposure of the blood to a vacuum for many hours. Some animals which were injected recovered, others died; but the difference was less clearly related to the duration of the exposure. A second series of experiments was to determine the influence of time on the poisonous material. When the putrefied blood was kept so long that no living bodies could be discovered in it by microscopical examination, the same toxic effects were produced by its injection, but were less intense. Some animals recovered, and those which died lived a longer time—ten or twelve days. The *post-mortem* appearances were the same. Their blood, examined immediately after death, contained active bacteria, vibrios, &c. Putrefied blood was then dried by slow exposure to the air, powdered, mixed with distilled water, and injected. The effects were not, as in the other cases, immediately manifest. After four to six days of incubation the animals became ill; two died on the tenth and sixteenth days, others recovered. The lesions were the same; the blood contained active bacteria and vibrios. M. Feltz concludes that, as exposure to a vacuum and desiccation did not remove the toxic agent, it cannot be a gas; that activity on the part of the minute moving particles within it is not necessary for its septic effect, and that the development of bacteria, &c., in the blood of the animals injected points to the germs of those bacteria as being the probable efficient means of the production of the poisonous effects.

LANDOIS ON THE FORMATION OF FIBRIN FROM THE RED BLOOD-CORPUSCLES.

In a second part of the same paper M. Landois describes the formation of fibrin as being dependent on the dissolved corpuscles. If a drop of defibrinated rabbit-blood be brought into a drop of frog's serum, the cells aggregate together, and become sticky on their surfaces. The cells soon become globular, and those cells lying towards the periphery allow the blood-colouring matter to pass out. This dis-

colouring gradually extends towards the centre of the drop, and at last only a heap of stroma remains. The stroma-substance is very tough and viscid. At first the contours of the cells can be detected; and, when the stroma has been agitated to and fro, the cellular contours disappear, and viscous fibres and stripes are observed. Step by step the formation of fibrous masses from the dissolved mammalian cells can be observed. The author thinks this fibrin should be called "stroma-fibrin," in opposition to the ordinary fibrin or plasma-fibrin, which is formed without solution of the blood-corpuscles. The two kinds of fibrin may possibly be chemically distinguished from each other. In transfusion, if dissolution of the cells occur, then, of course, the formation of stroma-fibrin may take place. The coagulation occurs the sooner the more serous the blood. Animals in a state of asphyxia, into whom heterogeneous blood was introduced, showed the most extensive coagulation.—*Ibid.*

SALICYLIC ACID.

This substance, which is now attracting so much attention as an antiseptic and disinfectant, has been for some time known to chemists as a constituent of the oil of winter-green (*Gaultheria procumbens*), and of the essential oil of Monotropa Hypopithys, &c. It was not, however, until the publication of Professor Kolbe's paper in the *Journal für Praktische Chemie*, July, 1874, that much interest was awakened in the subject.

In the Chemical Section at the recent meeting of the Scientific Congress of Breslau the exhibition of this new disinfectant formed the chief attraction. It may be made from dry powder of sodium phenol, by conducting into it dry carbonic anhydride at 170° C. Salicylate of soda is formed, and this is decomposed by hydrochloric acid into sodium chloride and salicylic acid, which is precipitated. A good account of it is given by Dr. Squibb in a paper read by him before the New York Academy of Medicine, and subsequently published in pamphlet form. The acid, bleached or unbleached, occurs in minute, broken, acicular crystals, giving it the appearance of a granular powder, which is odourless and nearly tasteless, but leaves a sweetish, astringent after-taste. It is very slightly soluble in cold water, but very soluble in hot. The presence of neutral salts, as of sodium phosphate, has the power of increasing its solubility in water, three parts of the latter salt causing the solution of one part

of the acid in fifty parts of water. It is much more soluble in alcohol and ether than in water. It melts at 125° C., and sublimes at 200° C. It may be used either in the form of powder or in solution. Its advantages over other antiseptics may be thus briefly stated:

1. It is much more powerful and effective.

2. In quantities necessary for effectiveness it is wholly devoid of irritant properties.

3. It is as effective against chemical as against vital ferments; thus it will prevent the production of the volatile oils in mustard and bitter almonds.

4. In effective quantities it is odourless, almost tasteless, and perfectly harmless.

Dr. R. Godeffroy has an interesting paper on the subject of salicylic acid, in the *Zeitschrift des allgemeinen österreichischen Apotheker-Vereines*, April, 1875. He states that salicylic acid may be obtained in various ways besides by the method which we have detailed above. It may be prepared by the oxidation of salicin, a glucoside contained in the barks of some species of salix. It may also be got by the oxidation of saligenin, by heating oil of gaultheria with potassium hydrate, and by decomposing potassium-salicylate by hydrochloric acid. Salicylic acid may be considered to be an oxidation product of benzoic acid, since it contains one atom more of oxygen, thus: $C_7H_6O_2$ = benzoic acid, and $C_7H_6O_3$ = salicylic acid. It differs from its isomers, oxybenzoic acid and paraoxy-benzoic acid, by giving a beautiful violet colour with solution of ferric chloride.

From Dr. Godeffroy's experiments it would appear that salicylic acid is three times more powerful in its antifermentative action than carbolic acid. The *London Medical Record* for 26th May and 2nd June contains a full abstract of Professor Thiersch's paper on the substitution of salicylic for carbolic acid as an antiseptic (Volkmann's *Sammlung Klinisch Vorträge*, Nos. 84 and 85). We should not omit to mention that Dr. C. R. C. Tichborne, so far back as 1872, in a paper read before the Medical Society of the College of Physicians, Dublin, described the physiological action of salicylic acid and its general relation to carbolic acid. In a recent communication (*Medical Press*, 5th May) he suggests for medicinal uses a solution of three grains of the acid in an ounce of warm glycerine. The acid remains permanently dissolved in this menstruum.

ADDRESS IN PHYSIOLOGY AT THE BRITISH MEDICAL ASSOCIATION.

By William Rutherford, M.D., F.R.S.E., President of the Institutes of Medicine in the University of Edinburgh.

Mr. President and Gentlemen,—In the medical schools of Scotland physiology is still designated the Institutes of Medicine. This somewhat ancient title has the advantage of continually keeping before the minds of our students the fact that physiology lies at the very foundation of scientific medicine. Much, indeed, has been done in Germany and elsewhere to detach physiology from medicine, and to develop it as a branch of purely natural science. Such a development, however, gives to physiology an aspect somewhat different from that which it wears when we regard it as the Institutes of Medicine; and, therefore, this title is useful to the teacher, inasmuch as it constantly reminds him that he is more especially to dwell on those facts of physiology which are of value to the practitioner of medicine.

Physiology is, I need scarcely remind you, an experimental science. Apart from those which are the result of artifice, experiments of great physiological significance are being continually wrought for us by accident and by disease. Physiology owes much in the past to those who, like you, are engaged in the daily study of these pathological experiments; for, was not the function of the spleen an enigma until the effect of one of its diseased conditions was observed? Has not psychology been revolutionised by a study of brain disease? Did not Hughlings Jackson, with singular sagacity, apprehend from a study of brain disease that convulsive moments may spring from the cortex of the brain—a fact which, as you know, has since been demonstrated by laboratory experiment? Was not the crossed action of the cerebro-spinal axis revealed by the study of disease? and, indeed, was not the very foundation of nerve physiology to a large extent based upon a study of nervous disease by Charles Bell? Assuredly we cannot afford to detach physiology from medicine, for, without a doubt, in the future as in the past, the study of those bodily conditions that are abnormal will throw much light on those that are normal.

But, on the other hand, need I remind you of the difficulties you encounter in the analysis of these experiments of diseases, as you endeavour, for example, to determine the nature and the seat of some malady—say of the brain; the cause of a dropsy; the indication of some change in temperature, in the state of the

pulse, the respiration, or some secretion? And need I aver that, in this difficult task of pathological analysis, your labours grow less as physiology advances? And, if you look around you, is it not evident that those whose knowledge of physiology is the most profound, are precisely those who are most able to conduct this analysis with skill and with success?

At the present time there is reason for some feeling of anxiety with regard to the manner in which this much-needed knowledge of the institutes of medicine is to be attained by our students. In recent years the teaching of physiology has made a great stride in this country. Laboratories duly appointed have been, and are being, organised. The method of physiological instruction has, in most instances, passed from the mere prelection, illustrated by diagrams, to an experimental exposition of the subject. Very many of those whom I now address had doubtless an experience of physiological tuition similar to my own. I remember well how much we were told about the action of the bodily organs, but how little we were shown of such actions. We were lectured about the action of the heart and its valves, but the motions of the heart we never saw, the operations of its valves were never shown to us. We heard about the manner in which the blood-pressure might be measured, and we were duly apprised of the number of pounds and ounces of pressure on the square inch, but this fundamental experiment we never saw, nor did we even see the instrument that was used for the purpose. We heard about the chemical transformation which the food undergoes when affected by the saliva and the gastric juice, but of the manner in which it might be demonstrated that these changes really do occur we knew nothing. The bile was said to contain certain acids and pigments; the urine had urea, uric acid, etc.; but all demonstration of these great facts was neglected. In alluding to these defects in the tuition of physiology from which some of us have suffered I would not have it supposed that I desire to cast reflections upon the teachers; such is far from my intention, for I know the difficulties against which they had to contend, and I know the success with which they finally overcame them. But I merely desire to remind some of you how much you, like myself, were crippled in the study of practical medicine by the sadly imperfect manner in which we learned the cardinal facts of physiology.

At this moment there is a distinct danger of a return to something like this miserable mode of instruction, in consequence of the fanatical clamour of a number of persons, excited, it must be admitted, by one or two members of our profession.

I cannot suppose that any member of this Association enter-

tains the idea that experiments on the lower animals are not justifiable for the discovery of new truth, but I am aware that there are some who entertain the idea that vivisection is not necessary when it has for its object the mere demonstration, for educational purposes, of facts already known. Those who hold this doctrine appear to me to forget that physiology is an experimental science, and that no right conception of the subject can be obtained unless the student be shown the experiments that are necessary for the demonstration of certain facts. No language, however clear, can depict the movements of the heart or the circulation of the blood, so as to call forth a picture so vivid and true as that which, without an effort, springs forth the moment these things produce an impression through the organ of sight. The manner in which the blood-pressure is affected by retarding the heart's action, by dilating the arterioles, or by muscular contraction, the changes which follow division of the sympathetic nerve in the neck, the action of the chorda tympani on the submaxillary gland, the result of stimulating the cortex of the cerebrum, the reflex power of the spinal cord, the tetanus from strychnia, the paralysis from curara,—these and other equally great fundamental facts in physiology give rise to nothing more than vague and feeble conceptions unless they are witnessed. Has not every teacher repeatedly observed the altogether different mental attitude which the student assumes the moment you pass from a mere description to a demonstration of phenomena? You far more forcibly arrest his attention, and far more deeply imprint upon his mind the facts which you would bring home to him. He is apt to forget that which he has merely been told, but the impression of that which he has seen is with difficulty effaced.

There is, however, a great deal more than this. It is not enough that the student of medicine should be crammed with so many facts about the bodily machinery—it is of infinitely greater importance that he should be really *educated* in a knowledge thereof. He cannot be educated unless you assume that he has a right to question your statements, and to demand from you a demonstration of the truth of what you say. It is not enough that you merely state to him, in an *ex cathedrâ* manner, that this or that is so; you ought on all possible occasions to *prove* to him that it is so. You ought to appeal to him as an individual, who can and who ought to think for himself, and therefore, as an individual who is not merely to be crammed, but to be convinced.

Every examiner in physiology must have repeatedly observed how glibly the student may repeat to you a statement of fact, but how sorely puzzled he often appears when you ask him for

the evidence upon which his statements are founded. Moreover, every one must have noticed how often the student lacks knowledge that is definite; he mingles together things that are certain and things that are uncertain, because he has not been sufficlently trained to examine experimental evidence. Of how little avail is this unreasoning and indefinite knowledge when the student comes to thread his way through the difficult analysis of disease. He either believes or he doubts too much. He oscillates from one extreme to the other, because he is wanting in definite knowledge, and because his critical power has not been sufficiently developed.

Now, sir, I maintain that this definite and critical knowledge regarding the bodily mechanism cannot be attained unless our students be shown experiments on living animals; and I hold that those authorities who seem to be of opinion that this method of tuition may be dispensed with, are entirely overlooking the vast importance—not only to the student himself, but to our whole race—of an experimental manner of laying the foundation of a knowledge of the institutes of medicine.

It is, I believe, too much to assume that those who advocate a flimsy and superficial method of teaching physiology are altogether actuated by feelings that are termed humane. I fear that there is lurking behind this disposition a feeling of indifference to what are the true principles of medical education, or, what is more likely, there is an incorrect appreciation of these principles. It must, however, be admitted that, notwithstanding the vast importance of physiological experimentation in the teaching of medicine, the circumstances under which it is possible demand serious consideration.

No one can deny that animals daily suffer pain in order that they may be eaten by man, and also in order that man may not be eaten by them. If it be thought necessary to put countless animals to a painful death for the purpose of keeping the human race alive, may not the physiologist inflict pain, not only for the discovery of new truth, but also for the right education of those who have to spend their lives in preventing and in healing disease? Is the one object less important than the other? Indeed, is not the object in both cases precisely the same? Why, then, this clamour against physiologists? The pain produced in all the physiological experiments performed in this country in the course of a year is, I believe, as nothing when compared with that inflicted upon animals by the members of her Majesty's Lords and Commons on an autumn holiday.

I would not, however, for a single moment speak lightly of the production of pain, for it is the function of those who pursue medicine to alleviate pain and suffering. Our students would,

indeed be badly trained for the pursuit of a calling so humane as that of medicine if they did not find us on all occasions carefully avoiding the giving of pain that is not absolutely necessary. Therefore it is our duty, for this as well as for other and obvious reasons, to use narcotics in our experiments upon animals whenever it is possible. It is not necessary for a sound physiological education that our students be shown *all* the experiments that are needed to demonstrate physiological truths. We probably do enough if we show them experiments on the cardinal points of physiology; and I aver that all the experiments on the higher animals that are really required for the purposes of education can be performed with the aid of narcotics.

Seeing that this is so, why should it be that some have become convinced that, in consequence of the present inflamed state of the popular mind on the subject of vivisection, the right education of medical students must be abandoned? The popular mind has been abused by inaccurate and misleading statements regarding both our motives and our actions. I maintain that a great and deplorable error was committed when the unreasonable clamour of the antivivisectionists was met in the spirit of compromise, instead of the spirit of stern resistance. I believe that the unfortunate Vivisection Bill that was laid on the table of the House of Commons conferred a dignity upon the policy of the antivivisectionists which, but for that Bill, it would probably never have possessed. It is true that there has been a withdrawal of that singular Bill, according to which we were to have been fined fifty pounds, or to have been sent to prison for two months, if we had dared to show our students any experiment even upon a narcotised animal; but the effect of the Bill is not effaced. The increased boldness which it has given to the pretensions of the antivivisectionists is only too evident. All that we can now hope for is, that the good sense of our legislators will in the end prevail, and that they will do nothing to hamper the education of our medical men.

I have felt, sir, that in an address on physiology I could not pass over in silence this, the leading topic of the day. I have alluded to it but briefly; for, although it is of the deepest importance, there is another subject to which I would ask your attention.

Nine months ago, in an introductory address given in this University, I had occasion to review the present aspects of physiology (*Lancet*, Nov., 1874). Having nothing further of a general character to say thereon, I have selected a special subject in physiological pharmacology which will, I trust, prove interesting to the practitioner of medicine.

The remainder of the address was devoted to a report of a large

number of experiments on the biliary secretion of the dog, by Professor Rutherford and Monsieur Vignal. As this part of the address was illustrated by a large number of graphic representations of the results of the experiments, and as the expenses of the research have been defrayed by the Scientific Grants Committee of the Association, a full account of the experiments, with woodcuts of the curves shown in the lecture, will be published in the *Journal*. The following is a brief *résumé* of this part of the address.

It has been shown by Professor Hughes Bennett's Committee, appointed by the British Medical Association, that in dogs with permanent biliary fistulæ, and living upon a fixed diet, "spontaneous diarrhœa, dysentery, and purgation produced by blue pill, calomel, corrosive sublimate, and podophylline, always diminished the solid constituents of the bile, and, with one exception, the fluid portion of the bile also."

More recently Röhrig performed experiments on the action of cholagogues in fasting curarised animals with temporary fistulæ, and found that large doses of croton oil greatly increased the secretion of bile; and that a similar effect, though to a less extent, was produced by colocynth, jalap, aloes, rhubarb, senna, and sulphate of magnesia, the potency of these agents as hepatic stimulants being in the order mentioned. He found also that castor oil had little effect, and that calomel, while it seldom recalled the biliary secretion, nevertheless somewhat augmented it when it was taking place slowly.

In Dr. Rutherford and M. Vignal's experiments a modification of Röhrig's method was adopted. Dogs which had fasted for eighteen hours were curarised, and artificial respiration maintained. A canula was tied in the common bile-duct; the cystic duct was clamped. The bile flowed from the canula into a finely graduated cubic centimètre measure, and the quantity secreted was recorded every fifteen minutes. It was shown that this method of continuous observation yielded results far more reliable and instructive than that adopted by Röhrig.

Two experiments on the secretion of bile in dogs that had fasted for eighteen hours, and which received nothing more than the doses of curara used in all the experiments for the purpose of keeping the animals at rest, showed that the biliary secretion was not affected by the doses of curara given; that the biliary secretion, on the whole, somewhat diminishes in the course of an experiment lasting from six to eight hours, but that the chemical composition of the bile remains almost exactly the same.

The curara was always injected into a vein. The various substances hereafter mentioned were injected directly into the duodenum; for this purpose the wound in the abdominal wall was

opened, and the substances injected through the wall of the viscus.

Three experiments with croton oil showed that, although it produced violent irritation in the alimentary mucous membrane in all cases, it increased the biliary secretion in only one instance. A high place is, therefore, not assigned to this substance as a stimulant for the liver.

Six experiments with podophylline proved that this substance greatly increases biliary secretion. A definite statement regarding the composition of the bile before and after podophylline will be given in the report.

Röhrig's statement that aloes deserve a high place as a hepatic stimulant was confirmed by three experiments, in which the extract of socotrine aloes was employed. The analysis of the bile (not hitherto given), however, showed that after aloes the bile is more watery; nevertheless, the velocity of secretion is so much increased that it certainly causes the liver to excrete more biliary matter.

Three experiments with rhubarb proved that it is a far more important hepatic stimulant than Röhrig has stated it to be. Doses of rhubarb were given nine times in the course of the experiments, and they never failed to excite the liver within half an hour after they were given.

Analysis of the bile before and after rhubarb in all the three experiments proved the remarkable fact that, notwithstanding the greatly increased velocity of secretion after rhubarb, the bile-solids secreted by the hepatic cells are not diminished. The rhubarb apparently calls forth an increased secretion of normal bile.

Three experiments with senna proved that its power as a cholagogue is far below that of rhubarb. The bile is rendered more watery.

Four experiments with the aqueous extract of colchicum proved that it is a very decided cholagogue. The bile was rendered more watery, but the increase in the velocity of secretion was such that the amount of biliary matter excreted by the liver was certainly increased.

Two experiments with the solid extract of taraxacum proved it to be a cholagogue, though not a powerful one.

Two experiments with scammony proved that it has a slight cholagogue action.

Of four experiments with calomel, the secretion of bile was slightly increased in one, but there was nothing but diminution of the secretion in the other three. Purgative action was produced in all. The bile was rendered more watery.

Two experiments with gamboge gave no evidence that this substance is a cholagogue.

One experiment with castor oil confirmed Röhrig's statement that this substance has scarcely any cholagogue power.

Two experiments with dilute alcohol injected into the stomach showed that after the alcohol was given the secretion of bile slightly diminished.

In the report a full account will be given of the post-mortem examination of the state of the alimentary canal (hitherto entirely omitted in such experiments), so that the effect upon the biliary secretion and that upon the intestinal mucous membrane can be compared.

It was shown that the increased biliary flow from podophylline, rhubarb, etc., in these experiments could not be ascribed to reflex contraction of the gall-bladder; for this had been previously well-nigh emptied by digital compression, and the cystic duct had been clamped; nor could it be ascribed to reflex spasm of the larger bile-ducts, for the exaggeration of the biliary flow was far too great and far too prolonged to be explained in this way. Reasons were adduced for regarding it as probable that the agents are absorbed, and act on the liver directly. It was not professed, however, that their *mode of action* was definitely settled, the experiments having had for their primary object a determination of the facts of the case.

The opinion was expressed that powerful purgative action tends to diminish the biliary secretion.

The diminished secretion of bile in *non-fasting* animals after podophylline, observed in the experiments of Dr. Bennett's Committee, probably resulted from a diminished absorption of food from the alimentary canal, in consequence of the purgative action.

When the hepatic and intestinal stimulant, such as podyphylline, is administered to an animal that is not fasting, it is probable that (1) the liver is excited to secrete more bile; (2) the absorption of bile and food from the small intestine is diminished on account of the purgative effect.

In conclusion, it was pointed out that this research proposed to be simply a contribution to comparative physiological pharmacology; and that it was left to the clinical investigator to compare these results with those observed in human pathological conditions.

PROPOSED VETERINARY COLLEGE IN AUSTRALIA.

THE *May* number of the 'Journal of the National Agricultural Society of Victoria' contains the following convincing article on this subject:

"The subject of the establishment of a Veterinary College

and Hospital in Melbourne having been so frequently placed before the public, it is a matter of serious import that it has attracted so small an amount of attention from the classes it most immediately interests. In our last issue we briefly noticed the importance the *Veterinarian* for February last attaches to the subject, in its notice of Mr. Richard Bennett's papers to our society, and gives the matter much prominent notice. Without going over the same ground, we will endeavour to point out the great advantages of its establishment in another direction. A Veterinary College and Hospital in Melbourne, presided over by competent professors, would be at once recognised by the profession in England and the Continent as of the highest possible importance. The fact of no similar institution existing in the Southern Hemisphere leaves the European societies completely in the dark and ignorant of many diseases and parasitical affections that may exist not only in our domesticated, but likewise wild animals, and which, until such an institution is established, will probably never be discovered or investigated. At present we are almost in the dark regarding the everyday results of scientific investigations at home; but few numbers, possibly not exceeding a dozen in all, of the *Veterinarian*—the standard veterinary gazette of England—are sent out to Victoria by each mail, and the English veterinarians and helminthologists are quite unacquainted with our researches and diseases—many of them minor, and at present possibly insignificant—peculiar to our stock, as we are of what is going on in England and the Continent. Direct correspondence would be the immediate result of the establishment of the college, and both Europe and Australasia would be mutually benefited by the results of investigation, the importance of which is at present, unfortunately, but too little understood and appreciated by our colonists. We have not as yet a single society or institution that gives us the slightest information upon subjects of such vital importance to us, not only as a large stock-breeding community, but also as exporters of preserved meats, upon the establishment of a permanent and popular demand for which health in our stock is so necessary. We have, it is true, a microscopical society in Melbourne, but its investigations do not elucidate anything that tends to enenlighten the grazing portion of our community as to the nature of parasitical diseases and others where microscopical investigations are considered by European veterinarians and helminthologists as essential requisites to scientific research. It does not appear to be sufficiently understood that we are essentially a pastoral people. With our own colony con-

taining upwards of 70,000,000 acres, the agricultural area is but an infinitesimal portion, more than nine tenths of the whole of the land being uncultivated. In the second paper on the subject of a Veterinary College, which we published in our January number, the value of horses, sheep, and cattle at present depasturing in the Australasian colonies represents in the aggregate £48, 138, 231, and the value of the wool exported during the last season amounted to upwards of £7,000,000 sterling. Of this a considerable portion comes from Riverina, which, so far as our commercial relations are concerned, we may look upon as an integral portion of Victoria. Yet with all this amount of stock depasturing we have made but little advance towards establishing an institution to educate the youth of the colony in the veterinary profession. As our colony becomes more densely stocked, which must be the case with increase of population, the risk of disease appearing will be the more imminent, and if a college were established in Melbourne to-morrow it would be at least three or four years before its results in sending forth properly qualified practitioners would manifest themselves. At the late conference of Stock Inspectors, held in Sydney in November last, Mr Alexander Bruce, Chief Inspector of stock for New South Wales, gave the following as an approximate estimate of the losses sustained by the Australian colonies through preventible diseases in stock :

	£
Pleuro-pneumonia in cattle . .	8,000,000
Scab in sheep	20,000,000
Catarrh	2,000,000
	30,000,000

This does not include losses from fluke and worms, or the Cumberland disease, which proved fatal to many thousands of sheep on the Castlereagh and Namoi rivers in New South Wales some years since. The nature of the so-called Cumberland disease, from the want of proper veterinary investigation, was never fully ascertained. The dread effect of this disease manifested itself in sacrificing many valuable human lives, caused by blood-poison being introduced into the system of men employed skinning the sheep that died. A disease called the Blackleg also proved fatal to large numbers of cattle in New South Wales in the years 1847 and 1848, and so suddenly did it attack them that rarely more than half-an-hour elapsed from the first symptom appearing until the beast was dead. The same

disease also attacked horses—three racehorses training in Coutt's stables, at Homebush, dying very suddenly at the same time. We mention these facts to show how liable we are to sudden and fatal outbreak of disease among our stock without any notice or premonitory symptoms; and how utterly helpless we would be for want of an adequate and properly organised veterinary staff should future epidemics appear. We must look beyond our own immediate consumption for outlets for our yearly increasing stock. Fiji, with its daily augmenting population of Europeans, is almost totally devoid of cattle and sheep, and the time is not far distant when our colonies will be called upon to supply their demands by a regularly organised trade. Europeans will not live on yams and pork, and salted provisions; and as the islands are not adapted to the rearing of stock, it must be imported. Again, India looks to us as the most reliable source of horse supply; and as this is certain, eventually, to assume very large proportions, it is of the greatest importance that we have the necessary veterinary skill to supervise and attend when any illness or outbreak of disease appears. To practically illustrate the value of the veterinary profession we will say—A farmer in a remote district has 100 cows, which he values at, say, £7 per head, £700; a disease similar to what we have described appears, and he loses, through want of professional skill, say, twenty of them; this is a loss in direct money value of £140. Could he call in veterinary aid at once, and, by skilful treatment, save fifteen out of the twenty that would otherwise die,

	£	*s.*	*d.*
His loss would be then . .	35	0	0
Say, veterinary surgeon's fee .	20	0	0
	55	0	0

He would then save £85, besides being instructed how to act for the future, and be able, under instructions from the surgeon, to adopt such sanitary and preventive measures towards the rest as will secure him from further losses. When disease attacks us it is too late to make preparations to repel it. 'To be forewarned is to be forearmed,' and we sincerely trust that our agricultural friends will give this subject the attention to which it is so pre-eminently entitled."

[Whilst cordially endorsing the views of the writer, we can only express the belief that if any wealthy stockowner would make a decided move in the matter, his patriotism, as founder

of the college, could hardly fail to meet with appropriate recognition at the hands of his fellow colonists.—EDS.]

MONTREAL VETERINARY COLLEGE.

The *Montreal Gazette* of Sept. 3rd says that the erection of the new premises has been pushed forward with unusual energy. It will be remembered that at the meeting of the Council of Agriculture, held here in March last, a proposition from Professor McEachran was brought forward, agreeing to erect, at his own expense, a complete veterinary college, according to plans submitted, on conditions that the council would increase the grant, and guarantee its continuance for ten years —the council to have the right to send a number of pupils free, which liberal proposition was agreed to. The new college is situated on Union Avenue, near Dorchester Street, the very position in the whole city for a veterinary college. The buildings consist of a handsome edifice 57 feet long by 101½ feet deep, three stories high, and covered by a Mansard slate roof. The front is substantial and pleasing, being of red brick with cut stone basement and facings. The main entrance is by a handsome gateway in the middle of the building, a cut stone arch and columns surmounted by ornamental fretwork. To the left are the office, pharmacy and laboratory; to the right, the entrance to the lecture room, which is on the second story, a room 34 × 36, seated for fifty students. Over the lecture room is the museum, of the same size, to be fitted up with shelves, tables, and cases for the anatomical and pathological collection used for illustrating the lectures.

The stable is arranged to accommodate twenty horses, eleven loose boxes 11 × 9, and nine stalls 6 feet wide, the height of the ceiling (12 feet). Perfect ventilation and thorough ventilation will ensure health and comfort to horses under treatment.

Every precaution has been taken to remove as much as possible anything which might be offensive; dissecting will only be carried on during the cold winter months; and a thick walled brick vault has been provided for a manure pit, which is ventilated by a shaft communicating with a chimney. The dissecting room, on the second floor of the stable, is well lighted and thoroughly ventilated—will be fitted up with five tables, the subjects being taken up by a windlass. Adjoining the dissecting room is the infirmary for dogs, to be fitted up

with a dozen cages for the treatment of the disease of dogs—a branch of veterinary science hitherto almost neglected here. Harness room, feed bins, hay loft, &c., are also on this flat. A residence for a qualified assistant in the front building, and apartments for a groom over the stables, make this one of the most complete veterinary establishments on this continent.

It will be ready for occupation on the 1st of October, and will be well worthy of a visit by those interested in this important science.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

The thirtieth meeting of this Association was held at the Swan Hotel, Wolverhampton, on Tuesday, August 24th, 1875, the President, Thos. Greaves, Esq., of Manchester, in the chair, and there were also present—Principal Williams, of the New Veterinary College, Edinburgh; Messrs. Cartwright, Wolverhampton; Beddard, Wolverhampton; Hill, Wolverhampton; Blakeway, Stourbridge; Proctor, Coventry; Markham, Rugeley; Pritchard, Wolverhampton; Earl, Shifnall; Attwood, Belston; Cartwright, Whitchurch, Salop; Hodgkinson, Uttoxeter; Stanley, senr., Birmingham; Tugger, Newcastle, Staffordshire; Cartwright, junr., Wolverhampton; Olver, Tamworth; Kettle, Market Drayton; Brock, Wolverhampton; Dorber, Wolverhampton; Barnes, Whitchurch, Salop; Bell, Eccleshall; Roberts, Oswestry; and Over, Rugby.

The minutes of last meeting were read and confirmed. The accounts were audited and found correct.

The President remarked that the principal event of the meeting would be an address by Principal Williams on "The Rationale of the Treatment of Disease," which subject was one of the most important that could be brought before them. He felt proud that they had Principal Williams with them, because he believed no gentleman in the veterinary profession could give clearer views with respect to the treatment of disease generally. They all knew that the treatment of disease at the present day differed very materially from that of times past. They had not now that blistering, bleeding, and purging for disease, and he believed he might add that they had not so many fatal cases as they had in former years. He made this statement upon the foundation of a forty-years' experience. Some persons, including a number of

pathologists, asserted that there had been a change in the type of disease; but he (the speaker) was of a different opinion. Possibly, however, they would hear something upon the question.

Principal Williams then delivered his address. He remarked that the members of the Association had themselves chosen the subject upon which he should speak. It was a most difficult subject, and of such magnitude that it would take a large book to exhaust it. It was desirable that he should bring before their notice a type of disease generally before they could understand anything about its treatment, and for this purpose he thought it best to describe to them the changes which took place in what was visible to them, because he believed that the changes they could see, as they occur in wounds, were typical of the changes which took place in the internal organs which were beyond their observation. If a wound was made without any great amount of violence, if it was an incised clean cut, the following changes would be visible:—First, there was some degree of hæmorrhage, after which followed an effusion of serum, which was followed by what Dr. Pagett called the glazing of the wound, viz. the exudation of lymph. If in this latter stage the lips of the wound were brought into apposition, they found that the lymph became speedily converted into fibrous tissue, and the wound was healed. After practical experience he could recommend to the very careful consideration of his hearers the method of treating wounds advanced by Professor Syme as far better than the stitching up of the wounds as soon as possible after the infliction of the injury. When an injury or an irritant had been applied to a tissue it became inflamed, and they found that in accordance with the strength of the irritant or the degree of the injury was the degree of inflammation. If the irritant was weak, or the injury slight, the inflammation resulting would be simply that of the adhesive process, and the part would be healed in the simplest manner possible, provided it were kept entirely at rest; but if the injury to the tissue was greater, the repair, as in wounds, was effected by the suppurative process, which was of much greater length. Let them take, for example, inflammation of the pleura, as being, perhaps, the most common form in which veterinary surgeons had to deal with it. Of course they would admit that before the pleura or any other membrane could be inflamed there must be an injury or an irritant of which the inflammation was the result. It was now acknowledged by all pathologists that inflammation was simply a natural response to an irritant or injury; and if a part were not to inflame after the application of an irritant or the infliction of an injury, then undoubtedly the part which would not inflame would be in a most unnatural condition. The inflammation of a part, therefore, was perhaps not so serious a

matter to encounter as it had been considered in the past. It had been the custom to endeavour to cut short inflammation as soon as possible, but he believed that light was now dawning upon the profession, and that it was evident that such endeavours had frequently resulted in the death of the patient. It should be their object, seeing that inflammation was but the natural result of certain causes, to prevent a continuance of the causes, and thus assist nature in her process of repair. His experience had led him to conclude that in course of time the profession would believe what he now believed, and what was impressed upon him more and more as he grew older, namely, that counter-irritants in whatever form—whether mustard, cantharides, or scalding water—when used in chest diseases were seldom conducive to any good, but very frequently were productive of great harm. He believed that counter-irritation had caused the death of thousands of animals. His firm opinion was that there had not been any change in the type of disease. During the days of "heroic" treatment, of bleeding and blistering, animals died violent and agonising deaths, their pulse beating at a tremendous rate, and their respirations being too rapid for man to count; but now when animals died they died without that pain and excitement and that irritative fever which they had in the past. There were fewer deaths than formerly, and he believed that the more acute character of the disease to which they were subject in the past was due more to the treatment of a disease than to its nature. The speaker next proceeded to a scientific comparison of chronic and acute inflammation, remarking that in a chronic stage there was no effort on the part of nature to repair, and that it was, therefore, the more destructive. He also referred to other diseases in which he stated the remedies formerly used had been productive of much harm, and that the course now adopted was to keep up the strength of the animal by food, and to assist its recovery in other mild but efficacious ways.

A lengthy discussion followed the delivery of Mr. Williams's address, the point principally dealt with being that relating to counter-irritants, on which many and varied opinions were expressed.

A hearty vote of thanks was accorded to Principal Williams for his address.

The meeting next proceeded to the election of officers for the ensuing year.

Thos. Greaves, Esq., was unanimously re-elected *President.*

Messrs. Earl, Trigger, and Olver were elected *Vice-Presidents.*

Mr. A. B. Proctor was re-elected *Treasurer,* and Mr. Palfrey *Secretary.*

Mr. Edward Beddard, Wolverhampton, and Mr. Robert

Trigger, of Newcastle, Staffordshire, were unanimously elected members of the Association.

Dinner was afterwards partaken of by the members, the usual loyal and complimentary toasts being duly honoured before the company separated.

LIVERPOOL VETERINARY MEDICAL ASSOCIATION.

The forty-first quarterly meeting of the Liverpool Veterinary Medical Association was held in the Medical Institution, Hope Street, on Friday, 13th August, 1875. The President, George Morgan, Esq., in the chair. The following gentlemen were present:—Professor Walley, Edinburgh; Messrs. Freeman, Hull; Roberts, Oswestry; Barnes, Malpas; J. Lawson, A. Lawson, S. Hopkin, W. A. Taylor, T. Greaves, Falkner and Woolner, of Manchester; Cartwright, Whitchurch; Rothwell, Tettingham; Dobie, Birkenhead; Storrar, jun., Chester; Woods, Wigan; Lawson, Woolton; Welsby, West Derby; Messrs. Reynolds, Heyes, Harwood, Hutcheon, Ackroyd, Wilson, Leather, jun., Murphy, and the Secretary, Liverpool.

Letters of apology were received from Colonel Sir F. Fitzwygram, Bart., Professor Simonds, London; Professor Williams, Edinburgh; Professor McCall, Glasgow; and Messrs. Steel, Shorncliffe; Peter Taylor, Tom Taylor, G. H. Brown, M. J. Roberts, of Manchester; Cuthbert and Carter, Leeds; Naylor, Wakefield; Gerard, Market Deeping; King, Derby; Nuttall, Preston; Buckley, Blackburn; Williams, Holywell; Schofield, Pontefract; Jenkinson, Chester; Anderton, Skipton; Cartwright, Wolverhampton; Litts, Shrewsbury; Reynolds, Mansfield; Lewis, Crewe; Edwards, Abergele; Kettle, Market Drayton; Procter, Sumner, and Little, Liverpool.

On the President taking the chair he called on the Secretary to read the minutes of last meeting, after which he introduced Professor Walley to the meeting, to read his paper on the "Differentiation in the Symptoms and Characters of Intestinal Affections." The essayist occupied upwards of a hour in reading his paper, which was listened to throughout with the greatest attention and interest. He carefully and minutely described all the special and peculiar diagnostic symptoms which are present in the various diseases of the digestive system in the horse, ox, dog, and pig.

A short but interesting discussion followed, in which the

following gentlemen took part:—Messrs. Freeman, Hull; W. A. Taylor and J. Lawson, Manchester; Cartwright, Whitchurch; Welsby, West Derby; Lawson, Woolton; Murphy and the Secretary, Liverpool. The discussion was deprived of its chief interest as the essayist did not touch on the treatment of the various diseases, the reason being the length of the subject, which rendered it necessary that the matter should be condensed. The introduction of remarks on treatment would, no doubt, have given rise to the greatest divergence of opinion and the most lively discussion.

The essayist briefly summed up by answering the various questions asked, touching on every point raised during the discussion.

The members gave Professor Walley a hearty welcome, and a unanimous vote of thanks for his able and instructive essay, and expressed a hope that they might have the pleasure of seeing it in print.

In the evening the members of the Association and their friends sat down to an excellent dinner provided at the Adelphi Hotel. Mr. G. Morgan presided, and Mr. Welsby occupied the vice-chair. The *Chairman* proposed the loyal and patriotic toasts, that of the "Army, Navy, and Volunteers" being responded to by *Mr. Roberts*, Oswestry, a member of the Shropshire Yeomanry.

Mr. R. S. Reynolds, superintendent of the scavenging department of the Liverpool Corporation, proposed "The Royal College of Veterinary Surgeons," which was responded to by *Mr. John Lawson*. The toast of "The Veterinary Schools" was proposed by *Mr. W. A. Taylor*, who coupled with the toast the name of Professor Walley.

Professor Walley, after responding, proposed "The Liverpool Veterinary Medical Association," and coupled with it the name of the President. He said it was a great pleasure for him to propose the toast, inasmuch as not many years ago he was a member of the Society himself, and at its meetings he gained valuable experience and many hints which had been of service to him. At the meetings of the Association as valuable discussions took place as at the meetings of any veterinary medical association in the kingdom. As to the utility of veterinary medical associations, he thought that there were no organisations in the profession which could do more good, provided they were rightly used. They should only be used for the advancement of the profession, and not for anything like party purposes, and should not only be used for the healing, but also for the prevention of diseases amongst animals. It was a great pleasure for him to come to Liverpool, to meet old friends, and to see Mr. Morgan in the presidental chair. He hoped he would long remain in it, and he had great pleasure in coupling his name with the toast.

The *Chairman*, in responding, said he had taken a great deal of interest in the Liverpool Veterinary Medical Association. He was present at its birth some ten years ago, and had continued with it until the present time. It was now as strong as he had ever seen it, and when it reached its manhood in other ten years he hoped that it would be what he should like a veterinary medical association to be. It had had its days of adversity as well as prosperity; but he hoped that all would pull together until it was second to no veterinary medical association in the kingdom. He should always have the greatest pleasure in doing what he could for it. The Association had had what no other veterinary medical association could boast of, and that was three lectures from professors—one by Professor Gamgee, the second by Professor Williams, and one now from Professor Walley.

Mr. W. C. Lawson proposed "Other Veterinary Medical Associations," which was responded to by *Mr. Freemen*, of Hull; *Mr. Greaves* proposed "The National Veterinary Benevolent and Mutual Defence Association," which was responded to by *Mr. Welsby*; and the remaining toast was "The Ladies," proposed by *Mr. A. Lawson*, and responded to by *Mr. M. Roberts*.

YORKSHIRE VETERINARY MEDICAL ASSOCIATION.

The usual summer quarterly meeting was held at the Queen's Hotel, Leeds, on Wednesday, August 18th, the President, Mr. J. W. Anderton, in the chair.

The following members were present:—Messrs. Greaves, Manchester; Naylor, Fallding, Wakefield; Carter, Walker, Bradford; Ferguson, Cuthbert, Leeds; Scriven, Aberford; Faulkner, South Milford.

Apologies for non-attendance were received from the following:—Messrs. Bale, Otley; Schofield, Pontefract—expressing regret at their not being able to attend.

Mr. Kingston was present as a visitor.

The minutes of the last meeting having been read and confirmed, Mr. Faulkner was admitted a member of the Association.

Mr. J. H. Ferguson (Leeds) exhibited J. T. Thompson's tooth shears, also some abnormal growths of molar teeth which were removed by them, and gave a graphic account of the easy removal of the same and the good quality of the instrument.

Mr. Greaves (Manchester) produced a circular saw for removing

abnormal growths of teeth, but it did not, in his opinion, in any way come up to Thompson's invention.

Mr. Walker (Bradford) showed an apparatus for keeping a fractured jaw in its position, and at the same time allowing the animal great facilities for eating. It met with the hearty approval of the members.

Mr. Greaves proposed that a *fac-simile* of each of the instruments be purchased by the Society and placed in the hands of the Secretary for the use of the members. The proposition was seconded by the *President* and carried unanimously.

A vote of thanks was accorded to Messrs. Greaves, Ferguson, and Walker for their valuable information.

It was also proposed, and carried unanimously, that a report of this and all other meetings be sent to Mr. Fleming's Journal.

After the usual vote of thanks to the President the meeting separated. WM. BROUGHTON, *Secretary*.

Veterinary Jurisprudence.

SPALDING COUNTY COURT.

BUFFHAM *v.* BELL.

Before JAMES STEPHEN, *Esq., LL.D., Judge.*

THIS case commenced last court-day, when plaintiff, Mr. Chas. Buffham, High Bailiff of the Court, sought to recover damages of Mr. Thos. Bell, farmer, Donington, for the breach of warranty of a pony which plaintiff said was unsound. Mr. Percival appeared for the plaintiff, and Mr. F. Atter for the defendant.

Messrs. Metherell & Son, veterinary surgeons, of Spalding, pronounced the animal to be lame of the off hind leg from paralysis and wasting of the muscles of the limb, which they believed to have existed for many months.

Mr. Simpson, harness-maker, also gave evidence as to the pony being lame.

At the close of the plaintiff's case the Court broke up, the further hearing being postponed to August 11th.

At the adjourned hearing—

Mr. Thos. Bell said he was the defendant, and remembered the plaintiff coming to him on the 26th of May at Donington. He asked to see the pony, and he showed him it, telling him the price was £31. He told him he was a very good pony, quiet, and free from vice, but he declined to give a warranty, saying, "Whoever buys him takes him as he is." They parted without coming to terms. His son, a horsebreaker, was present with him at the time. Mr. Buffham returned between two and three in the after-

noon and said he had heard such a good character of the pony that he would try to buy him. During the time they were bargaining the pony coughed, and plaintiff remarked upon it; he then said he might take it to Mr. Wyer and have it examined at his own expense, and if it were unsound he would pay the fee. He declined to do so. He bought the animal, but when they took it away he did not again warrant it. Mr. Metherill was a livery stable-keeper as well as a veterinary surgeon, and the plaintiff did a good deal of business with him. About a twelvemonth since the pony hurt his leg on a fence and he was a little lame, but he soon recovered, and was none the worse for that. He had bought the pony in, and had carefully watched it; and there was not the slightest shrinking of muscle or of unsoundness.

At this point His Honour suggested that the case should be tried by a jury, as it appeared there was likelihood of very contradictory evidence being given. Mr. Percival was quite willing to adopt the suggestion, but Mr. Atter made objection to such a course. His Honour intimated that under certain circumstances he had the power to direct the case to be retried before a jury, but, Mr. Atter pressing the objection, the case was proceeded with.

Defendant, in continuation of evidence, said the pony was sold by Mr. Laxton, a servant of Mr. Buffham, and he showed himself well. It was knocked down for £25 10s., although it had been sold for £28 10s., and 1s. in the £1 was allowed for commission. Mr. Lumby bought it, and he had repurchased it of him. It had been examined by Mr. Wyer and Mr. Gresswell, of Louth. The first complaint was on the 28th May, and he referred to a cough, and a second letter was received on the 30th on that subject.

Cross-examined.—That second letter said the pony had been examined, and was pronounced unsound. He did not commission Mr. Lumby to buy it for him. He suggested Mr. Wyer should see it when Mr. Buffham was buying it, because the same course was laid down before him when he bought it. Mr. Buffham did not say, "You say it is sound; that is sufficient."

Mr. Gresswell, veterinary surgeon, of Louth, said he had examined the pony in question, and in his opinion it was perfectly sound in every respect. There was not the slightest wasting of the muscle, and it was not suffering from paralysis.

Cross-examined.—He could undertake to swear that the pony was not suffering from paralysis on the 26th of May.

Mr. Goforth Wyer, of Donington, veterinary surgeon, said he had known the pony for about four years, and had seen it almost daily. He had only attended it for the slight injury stated by the defendant. He carefully examined the pony in April with a view of buying it. He should have seen atrophy of the muscles had such been in existence. Since then he had seen it frequently, and there was no sign at all of that disease. After the sale he examined the pony very carefully, and failed to detect the slightest symptom of paralysis.

Cross-examined.—He did not hear the evidence at the last Court. He gave his evidence according to his own careful examination; the pony was perfectly sound. There was not the slightest difference in the size of the feet.

The following veterinary surgeons would have been called but for the interposition of the Judge:—Mr. W. C. Bland, veterinary surgeon, of Boston, and Mr. Wm. Cooke, veterinary surgeon, of Spalding, were prepared to give evidence that the pony was not lame, neither had it paralysis or wasting of the muscles.

After this evidence, and on the suggestion of the learned Judge, the plaintiff submitted to a non-suit. On the application of Mr. Percival the case was re-entered, and leave was given for it to be tried by a jury.

HOLBEACH COUNTY COURT.

The usual monthly sitting of this Court took place in the Assembly Rooms, Holbeach, on Tuesday last, August 10th, 1875. The causes were heard before James Stephen, Esq., LL.D., Judge; and Richard Caparn, Esq., Registrar.

Joseph Shepperson *v.* Samuel Strawson.

Plaintiff in this case is a farmer residing at Deeping St. Nicholas, near Spalding, and defendant an innkeeper and horse-dealer at Holbeach; the claim was for £33, damage alleged to have been sustained through the breach of warranty of a horse.

Mr. J. G. Calthrop, of Spalding, appeared for the plaintiff; Mr. Toynbee, of Lincoln, for the defendant.

Mr. Calthrop, in briefly opening the case for the plaintiff, said this was an action arising out of a breach of warranty of a horse purchased by the plaintiff at Donington Fair. The sum paid for the horse was £67, for the keep was charged £2, and the sale of the horse by auction cost £2 18*s.*; putting against this £38, which the horse realised at the auction, there was left due to the plaintiff £33, and for that sum he now sued. The animal in question was bought by Mr. Shepperton of the defendant at Donington Fair in May, and as soon as purchased it was taken home. It was turned out into the field, and at the end of a month was brought up with the object of preparing it for work. Plaintiff soon found that the animal was not what he had expected, and besides other defects it was very restive, and not according to bargain. He accordingly sent for a veterinary surgeon, who upon examination pronounced the horse to be both a shiverer and a roarer. Mr. Shepperson subsequently saw the defendant, and explained the matter, and he said he had better sell it by auction and look to him for any balance of which he might be deficient. That the plaintiff had done, and he now looked to Mr. Strawson for money which he refused to pay, hence the present action.

Plaintiff said he resided at Deeping St. Nicholas, and was a

farmer. In May last he attended Donington Fair, and bought of defendant a three-year-old bay colt, for which he gave £67. The warranty put in was that signed by defendant. The horse was taken home by a man named Lay; it was not worked at first, but turned out. It was about a month after that the animal was brought up for work, and the gears first put on him. In consequence of something he heard, he sent for Mr. Metherell, veterinary surgeon, of Spalding. The horse having been examined, he sent Mr. Metherell's certificate to the defendant. The latter then came down to witness's house, and brought Mr. Dobson with him. They examined the horse in his presence, defendant remarking, "It's a bad job, and you must make the best of it." He (witness) attended the June Fair at Spalding after that, and told him he had taken the horse and put it up at the White Hart. He (defendant) said he would go and look at it. Afterwards he met him coming out of the stable, and half-an-hour subsequently, when he saw him, he asked Strawson what about the settling for the horse. Defendant asked him where he should see him after dinner, and on his telling him he said he would go and see him at three o'clock. He accordingly saw him at that time, and defendant asked him to have the horse put up at livery for a week, and to sell him the next Tuesday, and whatever balance there was due he would pay it. Mr. Strawson sent the auctioneer to witness, and he gave the orders for the sale. Defendant had not paid the balance, and after the horse was sold he said he would not pay until he was forced. After Mr. Metherell saw the animal, he (witness) could see a peculiar action in the legs of the horse.

Cross-examined.—He had put the horse at livery before he saw Mr. Strawson. He did say that if he sold it he would have to put him in the Court for the money. Nothing was done with the animal beyond putting on the gears and walking it round the close. No accident took place to the horse beyond its running away once. He first noticed the peculiar action after it was pointed out to him by Mr. Lay, and it extended to both legs. He did not notice it when he bought it, although he saw the animal walk, trot, and turn round. He saw Mr. Strawson a fortnight after buying it, but he said nothing about returning it, although he told defendant there was something peculiar in the action of the horse. It ran away when the gears were put on, and galloped at the gate and broke it. That would be about the 22nd June. Before he sent for Mr. Metherell he saw Mr. Strawson, and he told the latter that the horse had run away and that it was not sound. The first time he saw defendant his complaint was that the horse was not quiet. After the time it ran against the gate he did not think it went worse than before; it went like a horse ricked in the back. He (witness) was there when Mr. Metherell tried him for the wind by holding him by the hand and making him grunt. He told the veterinary surgeon about the horse going through the gate in general conversation,

and not because he thought it might have injured itself against the gate. He would swear that the action of the horse was the same when he sold it as when he bought it.

Re-examined.—He did not notice that the horse was in the least injured by running against the gate, although it broke two bars.

Mr. Robert Smith, farmer, of Deeping St. Nicholas, plaintiff's son-in-law, was with Mr. Shepperson when he bought the horse, and heard the warranty given. He saw the horse walk, and so did plaintiff, but neither of them saw it trot. He noticed no peculiarity in its gait. Plaintiff had never explained to him how it was he kept the animal a month after its peculiar action had been pointed out to him, and then attempted to break it in.

John Lay, horse-breaker, of Spalding, took the horse home to Mr. Shepperson's from Donington Fair in May last. He noticed that he swung his hind legs about, and he told Mr. Shepperson so when he got home. He had not said that the horse had been sold before as a screw. Mr. Vorley told him he was sold as he was, and without any warranty. He did not reckon the horse was swung in the back exactly. After that he took the horse to have its shoes taken off so that he might be turned out. A fortnight after that time he saw the horse again, when he was sent for to break it in. He believed plaintiff then told him the horse had run away, and that it was time he got the bits in his mouth to break him. He said he thought it was time he commenced to work. That would be some days after the horse had been through the gate. He complained of the animal before Mr. Metherell had been sent for.

Wm. Rossington, foreman and horse-keeper to Mr. Vorley, said he worked and broke in this horse, and he noticed nothing in the animal beyond what was peculiar to other young horses. He did at times twist his foot about.

Cross-examined.—They always reckoned the horse sound, and he never saw anything to lead him to conclude otherwise. He should certainly say the horse was sound while Mr. Vorley had it.

Mr. Richard Metherell, veterinary surgeon, of Spalding, deposed that he examined this horse on the 25th of June last. It was a shiverer and a roarer. Shivering was a spinal defect. The facts deposed to by previous witnesses were symptoms of shivering, and he should say it was unsound when purchased by plaintiff in May.

Cross-examined.—Shivering was an affection of the spine or an affection of the nerves, or both. Tremor in the tail was also a symptom of shivering, and he saw it in this horse. Shivering might come from accident and other causes. There would not be time between the 24th of May and the 25th June for the horse to have an accident that would cause the shivering. A horse going to a gate and breaking two bars of it might injure the animal, and an accident might produce partial paralysis, and sym-

ptoms of partial paralysis might be similar to those he had mentioned with reference to shivering.

This concluded the plaintiff's case.

Mr. Toynbee, for the defendant, said he was not going to deny that a warranty was given with this horse, but he should deny that there had been any breach of that warranty. Neither Shepperson nor Smith when they purchased the horse had the slightest suspicion that it was not sound; and after their great experience it was surprising, if the horse was unsound, that it should escape their notice. Lay had told them that as soon as he got the horse home he told plaintiff that there was something wrong with it, and he (the learned counsel) contended that it was Mr. Shepperson's duty to see whether there was any foundation for the suggestion that the horse was a screw. Instead of that, it was sent to get its shoes taken off, and turned out for a month. It was asserted that the action was then as bad as when the animal was sold at Spalding; if that were so, then they must have noticed it, for it was admitted that the horse was unsound at the time it was disposed of by auction. He should prove that the horse was perfectly sound at the time it was sold to plaintiff, and that subsequently it had run away and broken through a gate, and thereby, possibly, caused the injury of which complaint was now made. Despite the evidence that had been given by Mr. Metherell, he should call three gentlemen, whose opinion would be equally to be relied on with his, who would state that the horse was neither a shiverer nor a roarer; and he should prove that, although there was a peculiar action about the horse now, it did not exist at the time it was sold at Donington Fair. Having done that, he felt satisfied that he might confidently look for a verdict at the hands of the learned Judge.

Henry Major, farmer, of Holbeach, deposed to breeding the horse in question, and to having it in his possession two years, when he sold it to Mr. Vorley. During the whole time, he saw nothing wrong in the animal.

Mr. John Vorley, farmer, of Holbeach, spoke to having bought this horse of the last witness, and to his men breaking it and working it in the plough and harrow. He never noticed any peculiar action about the horse at all. It made £68 10s. at the sale, when Mr. Strawson bought it. He had seen the horse at work, but he saw nothing peculiar about it more than other horses.

Robert Barker, labourer, remembered the horse, and had frequently worked it whilst it belonged to Mr. Vorley. He noticed nothing about it to indicate unsoundness.

Samuel Strawson, the defendant, said he lived at Holbeach, and bought the horse in question at Mr. Vorley's sale. He at that time noticed nothing peculiar in his action. After that he took the animal to Lincoln Fair, and it was not sold, and whilst there he noticed nothing about it that aroused his suspicion. He then took it to Donington Fair, and put it in Mr. Upton's field. Mr. Shepperson, when he bought it, saw the horse walk and trot

about. He warranted it sound and quiet, and he believed it to be so then. When he saw Mr. Shepperson at Spalding he asked him how he liked the colt, and he said he did not know, as he had put it out in the field. Subsequently Mr. Shepperson sent for him, and he went. Plaintiff complained about the horse running away, but he said nothing about its being unsound. When he saw the horse at Spalding, it did not in the least resemble its action when he sold it. He knew what a shiverer was, and he was certain the animal was not a shiverer.

Cross-examined.—He did not bid for the horse when it was sold by auction, nor did any one else bid for him.

Frederick Upton, of Donington, said the horse was in his field a month and he saw it every day. He noticed no peculiarity about the animal. After the horse had been sold it was taken back to Donington, and he saw something very peculiar about it. There was certainly a very observable change in its appearance.

Robert W. Dobson, veterinary surgeon, of Holbeach, went to see the horse while it was at Mr. Shepperson's. He had known the horse before, but he had noticed no peculiarity about it. On the 28th of June he examined the horse carefully at plaintiff's, and it was certainly not a shiverer. It was suffering from paralysis of the muscles of the spine, and he should suppose it was brought on by a concussion. There was not the slightest indication of roaring, but there was tenderness along the muscles of the spine ; that would be an indication of recent injury. His peculiar action was patent to the most common observer.

Cross-examined.—In examining the horse the case was so patent that it did not occupy long. He should think its condition was such as might have been caused by running severely at a gate.

Goforth Wyer, veterinary surgeon, of Donington, had examined the horse, and it was certainly not a shiverer. He found it suffering from paralysis of the hinder extremity, which might have been caused by a concussion. He examined the horse for the wind, and put it to a very severe test, but there were no symptoms of roaring.

Mr. Hardy, veterinary surgeon, of Sleaford, examined the horse on the previous Saturday. It had not a single symptom of shivering ; it was suffering from paralysis of the muscles of the spine, and it would be likely to be caused by the accident named. He tried the horse for its wind, and it did not roar in the least.

Mr. Calthrop, in summing up for the plaintiff, said there was no question that the horse was unsound at the present time, and the question therefore was whether it was unsound when purchased by the plaintiff, or whether it was injured by running through the gate. He contended that from the evidence of the various witnesses the proper inference to be drawn was that the animal was unsound at the time it was purchased by the plaintiff of the defendant.

The learned Judge intimated that in order that the plaintiff

could establish his right to a verdict he must prove that at the time he purchased the horse it was suffering from what was called shivering, or else that it was unsound in wind and a roarer. With regard to the latter, the evidence of Mr. Metherell was very strong, although he (His Honour) did not consider his test as good as the others. Upon that point he felt a little doubt. With regard to the shivering, one surgeon described it as plainly existing, whilst, on the other hand, three veterinary surgeons told him positively that the animal was not a shiverer. In some respects he wished the case had been tried by a jury, as they would have been more conversant with such a case than he was; but looking at the weight of evidence on the side of the defendant, he must give him the verdict.

Verdict for the defendant accordingly.

ROYAL COLLEGE OF VETERINARY SURGEONS.

COLLEGE FUND.

The College Fund Committee desire to call the attention of the members of the profession to the circular issued in June last, in which the President, Vice-Presidents, and Council of the Royal College of Veterinary Surgeons appealed to every member of the profession in the United Kingdom who had not hitherto contributed a subscription towards the College Fund.

"It is considered that the advancement already made in the veterinary profession, and in the education of students, necessitates that the Royal College of Veterinary Surgeons, representing the University of our profession, should have not only a *locus standi*, but be identified with other similar institutions.

"The advantages to be derived are self-evident, viz. that the well-being of a growing profession should be upheld by its members, and its Council enabled to carry out the provisions of the Charter with comfort and effect.

"The College Fund Committee have the satisfaction to announce that with the subscriptions already received they have been enabled to purchase £1182 15s. 10d. 3 per cent. Consols, in the names of three Trustees; this amount, added to the balance not yet invested, will make a total of £1341 2s. 5d.

"The Committee, however, require a still larger sum to enable them to take action in this matter; they therefore urgently appeal for subscriptions, in the hope that they may

be supported, and that additional names may be added to the list of Subscribers.

"Subscriptions may be sent to the Secretary, Mr. Wm. Henry Coates, either by post-office orders, made payable at the District Post-office, High Holborn, or by cheques crossed 'Sir Samuel Scott, Bart., and Company, London.' An official receipt will be forwarded in return."

The following List of Subscribers to the Fund for Building or purchasing suitable premises for the offices of the College is complete to the present date, September 30th, 1875.

	£	*s.*	*d.*
Donation originally given by T. W. Mayer, Esq., in 1849	37	14	7
Interest thereon	27	2	6
Adlard, J. E., Esq., London	1	1	0
Arnold, Messrs., and Sons, Smithfield, London	5	5	0
Axe, J. W., Assist.-Professor, R.V.C., London	2	2	0
Axe, Joseph Machin, Esq., Doncaster	1	1	0
Balls, Messrs. G., and Son, Brixton	21	0	0
Barford, John Davis, Esq., Southampton	2	2	0
Barker, William, Esq., Middlesborough	2	0	0
Batt, Hartley Thos., Esq., London	10	0	0
Beart, Walter Jas., Esq., King's Lynn, Norfolk	2	2	0
Bentley, William, Esq., Margate	1	1	0
Blackett, Oswald S., Esq., London	2	2	0
Blakeway, F., Esq., Stourbridge, Worcester	1	1	0
Bland, Wm. Colley, Esq., Newbury, Berks	5	0	0
Broad, James C., Esq., London	10	0	0
Broad, Alfred, Esq., St. John's Wood, London	2	2	0
Broderick, John, Esq., Field Cottage, Finchley	10	10	0
Broughton, William, Esq., Leeds	2	2	0
Brown, G. T., Professor, R.V.C., London	20	0	0
Brown, John, Esq., London	2	2	0
Burgess, Willows and Francis, Messrs., London	5	5	0
Burrell, Messrs. T., and Son, London	10	10	0
Burt, Messrs. W. and W., Brighton	5	0	0
Carless, Messrs. J., and Son, Stafford	2	0	0
Carter, Joseph Shepherd, Esq., Bradford	2	2	0
Cartledge, B., Esq., Sheffield	21	0	0
Cartwright and Hill, Messrs., Wolverhampton	50	0	0
Case, Edward, Esq., Fakenham, Norfolk	1	1	0
Cave, George, Esq., Liverpool	5	5	0
Cheesman, John Jas., Esq., Wandsworth	5	0	0
Child, James, Esq., Hackney	5	0	0

	£	s.	d.
Clark, James, Esq., Cupar Angus, Perth	1	0	0
Clark, William, Esq., Islington.	3	3	0
Coates, Mr. W. H., London	5	0	0
Cole, Joseph, Esq., Stoke-upon-Trent	2	2	0
Coleman, Edward, Esq., London	2	2	0
Collings, John Jas., Esq., Plymouth	2	2	0
Collins, Jas., Esq., Staff V.S., Dublin	5	5	0
Constant, S. P., Esq., 5th Drag. Guards, Dundalk	5	5	0
Cooper, William, Esq., Berkhampstead	5	5	0
Cope, Alexander C., Esq., London	5	5	0
Corby, Thomas, Esq., Hackney	2	2	0
Cox, John Roalfe, Esq., London	10	0	0
Crowe, W. A., Esq., London	1	1	0
Cupiss, Francis, Esq., Diss, Norfolk	1	1	0
Cuthbert, John, Esq., Leeds	2	2	0
Death, W., Esq., Army Service Corps, Aldershot	1	1	0
Dray, E. C., Esq., Wandsworth	5	0	0
Elam, William Chas., Esq., Liverpool	2	2	0
Fahey, John, Esq., Nenagh County, Tipperary	2	2	0
Farrow, Wm. Hastings, Esq., London	5	0	0
Field, William, Esq., London	100	0	0
Field, William, Esq., jun., London	100	0	0
Fitzwygram, Col. Sir F. W., Bart., London	210	0	0
Fleming, G., Esq., Royal Engineers, Chatham	5	5	0
Freeman, James, Esq., Hull	1	10	0
Freeman, John, Esq., Hull	1	10	0
Freeman, Joseph, Esq., Keyingham, Hull	1	10	0
Fryer, John, Esq., Fleetham, Bedale	2	0	0
Gadsden, John W., Philadelphia, U.S.	5	5	0
Gill, Samuel, Esq., Hastings	1	1	0
Goodall, Henry John, Esq., Melton Mowbray	1	1	0
Gorton, Charles, Esq., Whitechapel	2	2	0
Gould, George Jas., Esq., Southampton	2	2	0
Gowing, Messrs. T. W., and Son, London	10	0	0
Greaves, Thomas, Esq., Manchester	20	0	0
Gregory, John B., Esq., Portsmouth	2	12	6
Gregory, Thomas, Esq., Tunbridge, Kent	5	5	0
Grice, Charles C., Esq., New York	5	5	0
Hammond, John, Esq., Bale, Norfolk	1	1	0
Harpley, M. J., Esq., Anonymous	5	5	0
Harpley, M. J., Esq., Royal Horse Guards	5	5	0
Harwood, Thomas, Esq., Liverpool	2	2	0
Hedley, Matthew, Esq., Darlington	2	2	0
Hills, Osborn J., Esq., Leamington	5	0	0
Hopkin, Tedbar, Esq., Manchester	2	2	0

	£	s.	d.
Howard, John, Esq., Woolwich . . .	1	1	0
Howard, Richard, Esq., Thetford, Norfolk .	1	1	0
Hunt and Parker, Messrs., Birmingham .	50	0	0
James, John C., Esq., Thornbury, Gloucester .	1	1	0
Jarvis, Frederick, Esq., London . . .	10	10	0
Kennedy, Thomas, Esq., Wrexham . .	1	0	0
Kent, W. H., Esq., London . . .	5	5	0
King, John Thos., Esq., Bournemouth, Hants .	1	1	0
Lambert, James, Esq., 17th Lancers, Dublin .	2	0	0
Lawson, Alexander, Esq., Manchester . .	5	5	0
Lawson, John, Esq., Manchester . .	10	0	0
Lepper, Messrs. H. and G. A., and Son, Aylesbury	10	10	0
Longman, Geo., Esq., Cavalry Depôt, Canterbury	2	2	0
Lowe, Clement, Esq., London . . .	2	2	0
Malcolm, John, Esq., Enniscorthy . .	2	2	0
Markham, John, Esq., Rugeley, Stafford .	2	0	0
Martin, John Bean, Esq., Rochester . .	2	0	0
Mavor, William, Esq., St. Leonard's-on-Sea .	10	0	0
Mavor, Messrs. Alexander and F. J., London .	50	0	0
Merrick, Thos. Jas., Esq., Northampton .	5	5	0
Moir, Charles, Esq., Cardiff . . .	2	2	0
Moon, James, Esq., Kingston-on-Thames .	5	0	0
Moore, James, Esq., London . . .	5	0	0
Moore, Jas., Esq., jun., London . .	2	2	0
Moore, W. J., Esq., Junior Army and Navy Club	10	10	0
Moss, Michael, Esq., Sittingbourne, Kent .	1	1	0
Naylor, M. E., Esq., Wakefield . . .	10	0	0
Nettleship, Edward, Esq., London . .	2	2	0
Olver, Harry, Esq., Tamworth . . .	1	1	0
Olver, Thomas, Esq., Truro . . .	1	1	0
Overed, J. D., Esq., Blofield, Norfolk . .	2	2	0
Owles, Alfred J., Esq., Staff V.S., Aldershot .	1	1	0
Paton, Thomas, Esq., Army Service Corps, Dublin	1	1	0
Pearce, J. H., Esq., Whitchurch, Hants .	1	0	0
Peele, Henry, Esq., West Hartlepool . .	2	2	0
Penhale, William, Esq., Barnstaple, Devon .	1	1	0
Penhale, Wm., Esq. junr., Holsworthy, Devon .	1	1	0
Price, Thomas S., Kennington Cross . .	2	2	0
Prudames, Alfred, Esq., Great Berkhampstead .	2	2	0
Pyatt, Henry, Esq., Nottingham . . .	2	2	0
Ritchie, James, Esq., Gateside, Kincaldrum .	5	0	0
Robertson, William, Esq., Kelso, Roxburghshire	3	3	0
Rogers, William, Esq., Whitechapel Road .	1	1	0
Roots, William, Esq., London . . .	2	0	0
Rowe, James, jun., London . . .	5	0	0

	£	s.	d.
Samson, Frederick I., Esq., Mitcham, Surrey	1	1	0
Santy, Arthur H., Esq., Norwich . .	1	1	0
Simonds, J. B., Professor, Principal R.V.C., London	30	0	0
Slocock, Oliver T., Esq., Carlow, Ireland .	1	1	0
Smith, William, Esq., Norwich . . .	5	0	0
Smith, George, Esq., Hanley, Staffordshire .	1	1	0
South, George, Esq., London . . .	5	5	0
Stanley, Edward, Esq., Warwick . .	5	0	0
Stanley, Thomas, Esq., Edmonton . .	5	0	0
Taylor, James, Esq., Colchester . . .	3	3	0
Taylor, William Baxter, Rotherham . .	2	2	0
Thomson, George, Esq., Horncastle . .	1	1	0
Walker, Alfred, Esq., Rugby . . .	5	0	0
Wallis, W. S., Esq., Halstead . . .	2	2	0
Wells, Thomas, Esq., Bracondale, Norwich .	1	1	0
Withers, Samuel Hicks, Esq., London . .	5	0	0
Withers, Henry, Esq., London . . .	1	0	0
Withers, Alfred, Esq., London . . .	1	0	0
Woodger, Joseph, Esq., London . . .	10	10	0
Woodger, Joseph, Esq., jun. . . .	10	0	0
Wragg, Francis W., Esq., London . .	10	10	0
Yorkshire Veterinary Medical Society . .	50	0	0

A gentleman has offered to give £100 towards the fund on condition that nine other members of the profession will subscribe not less than £100 each. Or the same gentleman will give £50 provided that nineteen others will subscribe a sum of not less than £50 each for the same purpose.

PRIZES AWARDED AT THE VETERINARY COLLEGE, EDINBURGH, AT THE CLOSE OF THE SUMMER SESSION, 1875.

The Dick Gold Medal for Anatomy.—Robert Rain (Castle Douglas).

The Dick Silver Medal for Anatomy.—J. McFadyean (Barrachan).
„ *Gold Medal for Chemistry.*—J. McFadyean.
„ *Silver* „ „ Robert Rain.

Special Prize for Botany offered by Professor J. B. Balfour.—J. McFadyean, with 80 per cent. of marks.

Highland and Agricultural Society's Medal not competed for until close of Winter Session, 1876.—Open to the Students of both Colleges.

TYPHOID FEVER IN PIGS.

Letter from Mr. William Anderson, M.R.C.V.S.

Gentlemen,—Having read several letters in the *Veterinarian*, by Professor Axe, on "typhoid fever in pigs," and having had for the last twelve years great experience in that disease, and treated them with great success, finding that with proper treatment and careful attendance they almost invariably recovered in a short time, I should be glad to ask him, through the medium of your Journal, a few questions with reference to the disease:

1. Where does he get the statistics to prove that the mortality is 75 per cent.?

2. How can pigs be exposed for sale in a market when far advanced in the disorder? for it is well-known that they cannot walk in that advanced state of the disease.

3. How does he account for the "diarrhœa more or less acute" which, according to him, "appears at various periods in the progress of the disorder," when it is generally well known that the bowels are almost always obstinately constipated, and that the great difficulty is to get them to act?

Mr. Axe has written so much about his pig-fever that I am afraid he has confused himself, and is mixing up typhoid fever in pigs with dyspepsia—diseases which often occur simultaneously.

If he had referred less to other works, and condensed his own substance, and also separated the symptoms of typhoid fever from those of dyspepsia, his observations would have been more valuable, both to students and practitioners; but as they are they are most confusing, and, according to my experience, he has not clearly stated the symptoms shown in pig-typhoid.

Yours obediently,

Hexham; Sept. 13th, 1875. William Anderson.

OBITUARY.

We have to record the death, after a long illness, of Mr. William Giltro, M.R.C.V.S., Hampstead, in the 52nd year of his age. His Diploma bears date December 20th, 1864.

Also, on June 2nd, of Mr. Samuel Greenlees, M.R.C.V.S., Todmorton. His Diploma bears date April 16th, 1867.

Also, Mr. Frederick Davis, M.R.C.V.S., Queensland, Australia. His Diploma bears date April 26th, 1866.

THE

VETERINARIAN.

VOL. XLVIII
No. 575. NOVEMBER, 1875. Fourth Series,
No. 251.

Communications and Cases.

FURTHER REMARKS ON PARASITES FROM THE HORSE AND ELEPHANT, WITH A NOTICE OF NEW AMPHISTOMES FROM THE OX.

By T. Spencer Cobbold, M.D., F.R.S., Professor in the Royal Veterinary College.

I had barely corrected and returned the proof of my previous paper on this subject when I received another set of entozoa from India. In accordance with the promise quoted at page 742, Lieut.-Colonel Hawkes had promptly transmitted a small phial containing amphistomes from the ox. They arrived on the 29th of September, and were labelled as having been "found in the intestines only." The specimens are sixty in number. All of them have a more or less shrivelled appearance and show greater variation in size and aspect than any of those previously received. This is neither the place nor occasion to offer minute comparisons between the different species of amphistomes in general, but, so far as my observations have extended, I feel bound to say that the study of this curious group of parasites is one of great difficulty, supposing the intention of the observer be to define the various species. Since the monographs of the learned Diesing appeared, some thirty-five years ago (and before that *savant* lost his sight), very little attention has been paid to the subject. The species run so closely together in character that

it is hard to draw any sharp lines of demarcation between one form and another. From the materials already in my possession I hope ere long to offer a more strictly scientific account of the several forms already indicated as new to science; but in the meantime I am concerned only or chiefly to enumerate these forms with their habitats and to dwell upon the practical bearings of the subject. In addition to the two species announced in my last paper, namely, *Amphistoma Hawkesii* and *A. Collinsii*, I have now in my possession the new series from the ox, and also another set from the horse. On the 14th ultimo (October) Professor Simonds placed in my hands a corked glass tube containing thirty-three worms of this genus. From one cause or another he had not drawn my attention to them before, but from this 'find' it now appears that Mr. Collins' discovery of equine amphistomes was anticipated by Mr. Edward Stanley, junr., who had, some five or six years back, sent the specimens to Mr. Simonds. They were forwarded from India during Mr. Stanley's residence in that country. It is worthy of remark that as regards size the amphistomes in question come much nearer to Lieut-Colonel Hawkes' masuri of the elephant than they do to Mr. Collins' specimens from the horse. Under any circumstances, however, the nomenclature already proposed must be provisionally allowed to stand, whether or not Mr. Stanley's amphistomes prove to be specifically distinct. Save in the matter of size such fine distinctions as are noticeable in the two sets of worms, when contrasted, appear to be almost entirely due to changes produced by the spirit in which they have been preserved. Therefore, regarding all these various Indian amphistomes as at best mere modifications of some original type form, it might be just as well to speak of them collectively by the native term of masuri. Thus, we have "masuri" from the horse, ox, and elephant, besides others from wild animals too numerous to mention. In the deer tribe they are very prevalent. Without insisting on the specific distinctness of the various forms that have now been either noticed or described, it will be useful, meanwhile, to draw up a list of those at present known to infest the more important quadrupeds. This catalogue may form a sort of point of departure for further special work in connection with the amphistomes infesting our domesticated animals. To the forms that I regard as doubtfully specific a mark of interrogation is appended.

1. The common amphistome (*A. conicum*, Rudolphi) infests the *rumen* of the bison, ox, zebu and all other varieties

of cattle; also the sheep and gazelle, red deer, reindeer, roe, fallow and deer tribe generally.

2. Gurlt's pouched amphistome (*A. crumeniferum*, Creplin) infests the rumen of the zebu (?).

3. Gurlt's hepatic amphistome (*A. explanatum*, Creplin) infests the gall-bladder and hepatic duct of the zebu.

4. Hawkes' bovine amphistome (*A. tuberculata*, T. S. C.) infests the intestines of the ox.

5. Hawkes' masuri or amphistome (*A. Hawkesii*, T. S. C.) infests the intestines of the elephant.

6. Collins' amphistome (*A. Collinsii*, T. S. C.) infests the colon of the horse.

7. Stanley's amphistome (*A. Stanleyii*, T. S. C.) infests the colon of the horse. This is apparently nothing more than a large variety of the above (?).

8. Natterer's great amphistome (*A. giganteum*, Diesing) infests the cæcum of the peccary.

9. Natterer's rough amphistome (*A. asperum*, Diesing) infests the cæcum of the American tapir.

10. Natterer's pear-shaped amphistome (*A. pyriforme*, Diesing) infests the cæcum of the tapir.

11. The truncated amphistome (*A. truncatum*, Rud.) infests the stomach, liver-ducts, and intestine of seals. It was formerly described as infesting also the gall-bladder and hepatic ducts of the cat and the fox, but it appears that the supposed feline amphistome is only an ordinary fluke (*Distoam conus*, Creplin).

The above list suffices to show that these parasites are apt to infest a great variety of quadrupeds. As yet none have been found in the human body, but Diesing has described one from an American monkey obtained by Natterer in Brazil. Not improbably one or more species infest savages. Very little attention has hitherto been paid to the amphistomes by professional men, probably because these worms appear to be harmless. If the statements of the natives in India are worthy of credit, the presence of "masuri" in the intestines is a source of much irritation; and from the observation made by Mr. Collins it is clear that many hundreds, or it may be fully a thousand or more, of these parasites may exist in the colon of a single horse. From what we know of the behaviour of other intestinal worms that infest the cæcum and large intestines of the horse it is clearly the duty of the practitioner (should he be made aware of their presence in any animal under his charge) to expel them. For a long time past people have sought to ignore the important part

played by internal parasites in the production of endemics and epizöoty, but the time for doubting this *rôle des entozoaires* is at length gone by. Depend upon it, many a death, hitherto reported as resulting from inflammation of the intestines, colic, splenic apoplexy, sunstroke, or to some other obscure cause, has been primarily due to entozoa, the presence of which may not even have been suspected during life. Our amphistomes may be, and probably are, amongst the least hurtful of the intestinal worms; but, allowing this to be the case, that is in itself no valid reason for ignoring their exitence altogether.

Lieut.-Colonel Hawkes, for example, loses no less than fourteen elephants in a space of little more than as many months. *Post-mortem* examinations are made with acknowledged care by skilful veterinary surgeons who attribute these deaths to eight distinct causes other than parasitic. Now, due regard being had to the fact that in every case in which Lieut.-Colonel Hawkes was present, flukes were found in the liver of these elephants (to say nothing of the masuri and soorti, the former of which species was also constantly present in the intestines), it does seem rather extraordinary that, in the reports, so many obscure causes of death should be indicated. Though long in practice as a physician dealing almost exclusively with internal parasitic diseases as they affect the human subject, I should be sorry to force my opinion with unbecoming zeal upon gentlemen who are daily taking charge of animal patients; nevertheless, if they will take it good in part, I venture to say (as the result of some very remarkable experiences in human practice) that many patients are treated for diseases which, though produced by parasites, are not regarded as such either at the time the animals are under treatment or even after death. The true cause of the disorder is constantly overlooked. I state no more than the truth when I say that patients have come to me who have for years been treated for parasitic diseases when they never at any time had suffered from parasites; whilst other cases have come under my notice which were treated for disorders not supposed to be entozoal in character when the real cause of their suffering was an internal parasite of some kind or other.

Again and again I have been asked by medical friends why the subject of parasites has been so much neglected. The answer is obvious. Until lately no one supposed that "worms" were so important. There is also another reason. At our medical colleges the students are required to get up a great variety of subjects for examination; some of them, *me judice*, of far less importance, practically, than the study of

parasites. Thus, though my colleagues at the Middlesex Hospital Medical College did all in their power to encourage the attendance of students at my lectures on parasites (to which they were admitted free of expense), the arduous character of their winter duties prevented any considerable number of the students from availing themselves of information which I had myself only obtained after years of sustained labour. Hereafter, in actual practice, these gentlemen will times and oft feel the want of that special knowledge which I think it was in my power to have afforded them. I judge so by the demands that are frequently made upon me by medical men in practice. In this matter, thanks to the foresight and liberality of the Governors of the Royal Veterinary College, the veterinary department of the healing art has made a clear advance in its curriculum, and thus we hope that in course of time the real practical utility of a knowledge of parasites and parasitic diseases will be rendered more conspicuously apparent than it is at present. Forms of obscure entozoa that, like these amphistomes, seem little worthy of regard now, may yet turn out to be of very considerable importance.

TYPHOID FEVER IN PIGS.

By J. Wortley Axe, M.R.C.V.S., F.C.S., Professor of Histology and Morbid Anatomy in the Royal Veterinary College.

(*Continued from p.* 751.)

The contagious nature of pig-typhoid has been clearly demonstrated by natural cases recorded in previous articles as well as by direct experiment. So far, therefore, as this question is concerned all doubt is fairly set at rest. It has also been stated that the malady is self-propagating, depending upon a special fever-germ which no common conditions can produce. The organisation of the animal to which the fever essentially belongs can alone supply the means whereby these germs are propagated. It is only within the past few years that the contagious nature of human typhoid has been fully established, for which information we are mainly indebted to the indefatigable labour and acumen of Dr. William Budd, of Bristol, a gentleman whose name it is pleasing to find so fully identified with the diseases of the lower animals, as illustrated by his writings on the "Siberian

Cattle Plague," "Sheep-pox," and on the malady in question. How far his acquaintance with comparative pathology, and especially with the contagious fevers of the lower animals, conduced to his success in interpreting the phenomena and conditions in regard to allied diseases in the human subject it is difficult to affirm. One of the highest living authorities on contagious fevers, viz., Dr. Murchison, until confronted by the overwhelming evidence of Dr. Budd, had been led to regard human typhoid as the offspring of putrefaction—as the result of some indefinite chemical compound developed at the expense of decomposing animal and vegetable substances. Sewers, cesspools, and water-closets, it was assumed, were the laboratories of the pest-breeding compound, and "pythogenic fever," or a fever arising out of putrefaction, was the term invented to signalise the origin of the affection.

Already I have insisted on a knowledge of comparative pathology as an aid to the elucidation of some of the diseases of mankind, and this position is strengthened by a reference to the conclusion above referred to in regard to human typhoid, and to the facts developed in connection with *enteric disease* in the pig. The pig is born in filth, it lives in filth, and is sustained by filth. Living under the most insanitary conditions, breathing a multiplicity of the most foul and noxious vapours, inspiring every conceivable organic form which the air can sustain and putrefaction nurture, devouring the vilest and most loathsome of matter, animal and vegetable, he not only exists but fattens to our profit, and furnishes some of our choicest morsels, and this despite the fact that he is susceptible of a disease which in its closest details is the counterpart of *enteric fever* in man. Surely in the face of these facts the "pythogenic" theory of typhoid could never have received the assent of so able a pathologist as Dr. Murchison. It is quite clear from all that has been written, both in regard to typhoid fever in the pig and in the human being, that however insanitary conditions may conduce to disease in a general sense, they cannot, even in their worst form, elaborate a material with all the specific attributes of typhoid contagium. Just as sheep-pox is the offspring of sheep-pox, and glanders of glanders, so likewise is *typhoid* fever perpetuated by continuous succession. That it is capable of being produced in the entire absence of putrefaction and under the most complete sanitary régime has been demonstrated by actual experiment. Nothing short of the specific virus, elaborated as it has been shown to be in the body of the animal, can produce that definite series of phenomena which we recognise as essential to the specific nature of

enteric disease. It need only be repeated here that the period of incubation is as definite as that of any of the eruptive fevers, and the symptoms and pathological lesions are equally consistent and distinct. The channels through which *pig-typhoid* is disseminated have already been incidentally alluded to in speaking of it as it occurred in Somersetshire and Wiltshire. It will, however, be necessary to a full appreciation of its sanitary relations to consider the question of dissemination in all its bearings. At what period in the progress of the malady the infectious principle is first developed, and with what phenomena its development is coincident, is a question of the highest interest. As yet our data in this direction are by no means reliable, nevertheless there is some reason for believing that the specific property of infection is developed simultaneously with the cutaneous and intestinal eruption. How long after the subsidence of the fever process this property endures still remains to be determined. In considering this last question it must not be forgotten that besides the intestinal discharges the cuticle of the skin, saturated as it is with the specific virus, is also a known fruitful source of infection. It follows, therefore, in regard to these matters, that the suppression of the one, and the completion of the process of desquamation in regard to the other, must be effected before any security from contagion can be fairly hoped for. It has been shown by direct experiment that the atmosphere plays an important part in the dissemination of *pig-typhoid,* and there is no reason to doubt that the contagious particles may be conveyed for long distances in this medium by strong aërial currents, and thus give origin to new centres of disease. What are the precise physical conditions of air and virus which concur in facilitating the dissemination of the latter is a question of vital importance. We have seen that the operation of drying does not in any way affect the propagating powers of the fever poison, and also that it may be kept for a considerable period in this desiccated condition without diminishing in the least degree its contagious property. By the light of these facts we can reconcile the sudden appearance of *enteric disease* in parts remote from infected centres, and as readily understand the fitful starts into life which *typhoid* exhibits after various periods of quiescence. A careful consideration of the fundamental properties of the fever virus serves in part not only to explain the so-called spontaneous origin of *enteric disease,* but it likewise suggests those primary sanitary principles on which measures of prevention are to be based. What is the pecise length of time the contagion of *pig-typhoid* will re-

tain its infecting power whilst in a dried condition, and whether or not its virulence is added to or diminished under the influence of putrefying animal and vegetable matters, are questions now in the course of solution. Food and water are mainly instrumental in the dissemination of *enteric disease.*

In considering the cause of infection the general habits and mode of life of the animal in question must be taken into account. In the human subject the mortality from typhoid fever does not exceed ten per cent., while in the pig it reaches the enormous average of seventy-five. In what manner is this difference to be explained? Is it that the virus is more potent, or that the constitutional powers of the pig are less strong? or does it refer to the degree of infection? For the solution of this question a consideration of the habits of the pig would seem to suffice. The tendency of this creature to feed from the ground, and at the same time to uproot everything that savours of putridity and decay, the almost invariable immersion of his dirt-laden feet in the food that he eats and the water that he drinks, are sufficient indications of the unerring certainty of a high degree of infection to leave but little doubt on the subject. No sooner are the intestinal discharges established than he commences to take into his system, in its most concentrated form, it may be the very poison he has himself elaborated. In this way the fever-stricken beast continues to add fuel to the fire that is already consuming him. Not so with the human subject; in him no sooner is the disease recognised than the source of the enemy is sought out; and be it sewer, cesspool, drain, or privy, all communication with it is at once cut off. In this way the patient is made secure against that constant infection to which the pig must necessarily be exposed. With these considerations in view, the great disproportion in the mortality of human and pig-typhoid can hardly be matter for surprise. The danger arising out of the natural habits of the pig is intensified manifold by the mode of feeding adopted in large herds. By way of illustrating this statement I must again refer to the Melksome outbreak. Mr. Kieval's herd occupied a long lean-to shed, which was divided into a number of compartments. At the north end of the building was a small store-house. Here the food was prepared in a large tub as required. Communicating with the latter was a long trough running the entire length of the building; an uninterrupted channel was thus established between the several pig-compartments, so that the whole herd could be fed at one and the same time from the same source. Under such conditions

all that was needed to infect the entire herd was the introduction of the tainted feet of the stricken animals into this stream of food from which they all partook. That this last and fatal act was supplied again and again is suggested by the fact that on three occasions every animal in Mr. Kieval's herd had to be destroyed. The history of this outbreak teaches us in the most forcible manner that the system of feeding adopted by Mr. Kieval and many others is, to say the least, bad! In large herds, where new stock is constantly being introduced, it is fraught with the greatest danger, not only to the individual owner, but likewise to the pig-keeping community, and the country. To what extent water plays the part of a bearer of the fever poison it is difficult to say on the paucity of data in our possession. Viewed, however, by the light of facts developed in the history of human typhoid, there is the strongest ground for believing that *enteric disease* in pigs is largely disseminated through the medium of sewers, cesspools, drains, and other sewage receptacles. If it be, as stated, "the exact counterpart of *typhoid fever* in man," then this conclusion stands unassailable. The movement of infected animals from market to market and from fair to fair is of all others the practice most pregnant with danger and wide-spread disease. When it is considered that the ground of a public market-place, saturated as it must become by the intestinal discharges of the sick, is occupied by fresh stock each succeeding week, and that the only food (mostly a few peas or beans) supplied to them while being offered for sale must be taken from the tainted ground, the danger of this most pernicious act can hardly be estimated.

The transmissibility of *typhoid fever* from the pig to man has not hitherto received that amount of attention which the importance of the subject deserves. On this account I undertook at some personal risk to solve the question, at least so far as my peculiar idiosyncrasy would permit. My first experiment in this direction consisted in confining myself in a small house with two pigs in an advanced stage of the disorder for from thirty to forty-five minutes morning and evening. This was repeated for six successive days. At the same time a plate and a glass jar filled with the excreta of these pigs were placed in my private room and exposed to a temperature of sixty-five to seventy degrees. They were allowed to remain in the room for three weeks, during which time I occupied it several hours daily. Having on two occasions inoculated myself accidentally while making *post-mortem* examinations without suffering any ill-effects, I

resolved to test the power of the virus removed from the cutaneous vesicles. For this purpose a scratch was made on the fleshy part of my thumb, and a drop of the virus allowed to fall upon it. After remaining for two or three minutes the superfluous fluid was removed, and the part was then covered with court plaster. Beyond a slight efflorescence in the immediate vicinity of the scratch no local effect was produced, neither did I experience any constitutional disturbance. I ought to add to this that in May last, while making a *post-mortem* examination of some pigs affected with *typhoid*, Mr. Rock, a student at the College, accidentally inoculated himself with the intestinal contents; on the following day his hand was somewhat sore and swollen, and he complained of a pain in the axilla. He prescribed for himself a saline aperient, and in the course of twenty-four hours all the bad symptoms had disappeared. It should be remarked that the carcasses from which he was inoculated had been sent from the country, and were somewhat advanced in decomposition. I am not aware of more than one experiment having been made to determine the transmissibility of *typhoid fever* from the human subject to the pig. This was performed by Dr. Murchison.* "The individual pig selected was between three and four months old. Care was taken that the dejections were obtained from typhoid patients, in which they presented the light ochry colour peculiar to the disease, in the most marked degree, and they were mixed up with barley-meal and other articles of food. The first was given on the 9th of Sept., 1858. For the first three weeks one was given every day, or every third day. During the next fortnight two or three were given every day, and during the last week one every second day. They were eaten greedily. On two different occasions during the first fortnight the animal had slight diarrhœa lasting for twelve hours, and its ears felt rather hot, but these symptoms speedily subsided. With these exceptions the animal exhibited no abnormal symptoms; its appetite was unimpaired, and its stools were of natural consistence, while it increased greatly in weight and size, as will be seen by the following measurements taken at the commencement and at the termination of the experiment:

	Sept. 9th.	Oct. 23rd.
"Circumference at middle of belly	25¾ inches	29 inches.
" behind fore-legs	23 "	27 "
" in front of hind-legs	22½ "	26 "

"On the 23rd of Oct. the animal was killed and its body

* 'Transactions of the Pathological Society,' vol. x.

opened. There was abundance of subcutaneous fat, and the muscular tissue appeared healthy in every respect. The intestines throughout were healthy. There was not the slightest trace of any recent or old ulceration anywhere, nor any thickening or alteration of Peyer's patches or of the solitary glands. The mesenteric glands were not enlarged." In support of the non-transmissibility of *typhoid fever* from man to the lower animals Dr. Budd adduces facts and observations of the highest order; indeed, they carry with them all the weight of direct experiment. He says, "In the most virulent outbreaks of *typhoid fever* there is no evidence that even the domestic animals which gather round the fever-stricken dwelling take the disease.

"At Chaffcombe, while nearly all the human inmates of the infected homestead were laid low by the poison, the dogs and cats which belonged to the house, and the poultry, pigs, horses, and cattle which thronged the yard, continued to enjoy perfect health. Yet the pond from which the latter drank was being continually polluted by a drain which received the whole bulk of the intestinal discharges from the fever-patients. I have observed the same striking contrast in other instances without number, and I may add that the whole course of observation bears out the conclusion to which the contrast so distinctly points." The result of my own experiments clearly demonstrates that the virus of *pig-typhoid* stands in the same pathological relations to other animals as the virus of human typhoid holds in regard to the pig. Rabbits and guinea-pigs inoculated from the latter experience no constitutional disturbance, neither do they suffer any local ill-effects from the operation of inoculation.

In a letter from Mr. Broad, of Bath, dated October 5th, he says, "I was told yesterday that a person of the name of P—, in the neighbourhood of Bradford, has lost ninety pigs from *typhoid fever* since we were there. The disease is now gradually dying out in this neighbourhood." A few days ago we were consulted with reference to an outbreak of *enteric disease* on the farm of Mr. Riley, Kipling Cote, Hull. Twelve pigs are reported to have succumbed to the malady, and "eighteen more were as bad as possible." At our request the carcasses of two pigs were forwarded to the College by Mr. Riley, and on making a *post-mortem* examination the cutaneous and intestinal lesions of *pig-typhoid* were found to be largely developed. We are informed that a neighbour of Mr. Riley's, living about two miles from Kipling Cote, has lost fifty-four out of a herd of sixty from the same disorder.

In the September number of the *Veterinarian* it was announced, on the authority of one of the London daily papers, that a serious outbreak of disease in pigs, the nature of which was not known, had occurred in the neighbourhood of Carrick-on-Suir. I at once put myself in communication with Mr. J. Johnson, veterinary surgeon, of Waterford, on the subject; and in reply to my inquiries he informed me that "there were a few pigs about seized with a violent purging, which lasted for a day or two and which reduced the animals very much, but they all recovered by a little nursing." Mr. Johnson says an offer of two pounds failed to procure him a pig that had died from the disease. This, however, he refers more especially to, "the people who do all in their power to keep secret anything in the way of disease affecting their stock."

INTERNAL DISINFECTION.

By the Same.

A SHORT time ago I called attention to the observations of Dr. Brackenbridge and Mr. Priestman on the subject of internal disinfection in regard to contagious fevers. I have here to add to the facts then stated some more recent observations by the last-named gentleman, who writes to me as follows:

4, MONTROSE VILLAS, CALEDONIAN ROAD;
14*th October*, 1875.

MY DEAR SIR,

An outbreak of foot-and-mouth disease occurred last month in a small herd of milking cows, the property of the Baroness Burdett Coutts, Highgate, and, as the antiseptic system of treatment was adopted and strictly carried out, I thought you would like to have the particulars.

The first case was noticed on the 9th ultimo in a herd of eight cows, which during the day were at grass, but they were brought into a shed morning and evening for the purpose of being milked. On the 11th I commenced to administer to each of the seven animals (three apparently healthy) a dram of carbolic acid twice daily. On the 13th a second, and on the 17th a third case was observed, but the remaining four have not shown any signs of the disease,

although I had them brought into the shed where the diseased animals were every morning and evening as usual.

Yours very truly,

H. PRIESTMAN.

J. W. Axe, Esq.

An accumulation of such facts as are here furnished by Mr. Priestman would soon set at rest all doubt as to the efficiency of internal disinfection in inhibiting the progress and preventing the spread of contagious diseases. I shall be glad if those members of our profession who have given this subject their attention will furnish me with the result of their experience. It is only by a system of combination and mutual help that we can hope to effect the solution of this great and deeply interesting question.

THE PRINCIPLES OF BOTANY.

By Professor JAMES BUCKMAN, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 753.)

GENTIANALES—THE GENTIAN ALLIANCE.

WE have now to deal with a large series of plants of great interest, both as regards their structure and their general qualities. To quote Prof. Lindley—"Here we find ourselves among the truly monopetalous orders of the French School. Previously a monopetalous was an exception rather than a rule; but now a separation of petals forms the exception." Gentianales have the following

"DIAGNOSIS.—*Perigynous exogens, with dichlamydeous, monopetalous flowers, axile or parietal placentæ,* and a minute embryo, or with the cotyledons much smaller than the radicle, lying in a large quantity of albumen."

Prof. Lindley has established no less than eight natural orders in the above alliance; we shall direct attention to four, namely—

1. AQUIFOLIACEÆ—*Hollyworts.*
2. APOCYNACEÆ—*Dogbanes.*
3. OROBANCHACEÆ—*Broomrapes.*
4. GENTIANACEÆ—*Gentianworts.*

1. The hollyworts are well represented by our native holly (*Ilex aquifolium*), and the many species and varieties met with in our shrubberies. Bentham gives the following description of the order:

"THE HOLLY FAMILY.

"A small order widely spread over the globe, limited in Britain to a single genus, from which the few exotic ones differ slightly in the number of parts of the flower and fruit. They all nearly approach the *Celastrus* family, but have the petals usually united into a monopetalous corolla, and the stamens inserted on its base without any fleshy disk round the ovary."

Our wild form is remarkable for a varying disposition to produce spinous leaves, a young tree being usually very spinous, whereas the old trees have leaves with an entire margin.

> "When it grows where nothing is to fear,
> Smooth and unarmed its pointless leaves appear."

The holly is a very beautiful evergeen tree, the leaves and fruits of which are highly ornamental, and hence it is a favourite in Christmas decoration. It is the badge of the Drummonds. We copy the following description of its various qualities from 'The Treasury of Botany':

"*I. aquifolium* is distinguished from other species by its peculiar smooth, wavy, shining, spinous leaves, and its short, axillary, many-flowered peduncles. The leaves are stated on good authority to be equal to the Peruvian bark in the cure of intermittent fevers. The root and bark are said to be deobstruent, expectorant, and diuretic, agreeably to which Haller recommends the juice of the leaves in jaundice. The berries are purgative and emetic, six or eight being sufficient, it is said, to produce the latter effect. The beautiful white wood is much used for inlaying, and bird-lime is obtained from the bark. It has been stated recently by M. J. Pierre that the young stems are gathered in Morbihan by the peasants and made use of as a cattle-food from the end of November to April with great success. The stems are dried, and, having been bruised, are given as food to cows three times a day. They are found to be very wholesome and very productive of good milk, and the butter made from it is excellent." *

It is a good plant for hedges, for which purpose it was much recommended and grown by Evelyn, but it is of slow growth. It, however, has much to recommend it, as it is not only highly repellant, but will stand clipping better than most trees.

Some of the exotic forms of the order are employed for various purposes; thus the leaves of the *I. Paraguayensis* are

* Vol. ii, p. 618.

used as tea, and with good reason, as theine is said to have been extracted from them, whilst some others afford dyes of considerable value.

The Dogbane family is well illustrated by our native periwinkle, of which we have two species, *Vinca major* and *V. minor*, well-known plants which, though so commonly met with in England, are probably both introduced, as it has been remarked that they seldom ripen their seeds with us—an indication that they are derived from a warmer climate, the home of the order being, indeed, South Europe, South America, and Tropical Asia, as our hothouse forms, such as Allamandas, Dipladenias, Oleanders, or Neriums, amply testify.

Our native forms are remarkable for their curiously constructed stamens and pistils, which well repay the careful scrutiny of the botanical student, but which it is difficult to describe. The whole order is singularly beautiful, but beneath their glorious exterior are stored poisons of a most active description; thus we learn that a few years ago a child died from having eaten one morning a quantity of oleander flowers; it was seized with violent colic, under which the child sank at the end of two days. In 1809, when French troops were lying before Madrid, some of the soldiers went a-marauding, every one bringing back such provisions as could be found. One soldier formed the unfortunate idea of cutting the branches of the oleander for spits and skewers for the meat when roasting. This tree, it may be observed, is very common in Spain, where it attains considerable dimensions. The wood, having been stripped of its bark and brought in contact with the meat, was productive of most direful consequences, for of twelve soldiers who ate of the roast seven died, and the other five were dangerously ill.*

In like manner the root of *Nerium odorum* is found to be a poison in India. When, however, these dangerous qualities are moderated, the species become useful medicinal agents, either as emetics or cathartics.†

These notes are sufficient to show that in the dogbanes we have a most active family of plants. They form a large group consisting of no less than 100 genera, numbering as many as 566 species according to Professor Lindley. That they present a most active list of plants is undeniable, and it is conceivable that if thoroughly examined and their virtues fully tested the whole would yield many valuable medicines. At present, however, we must be satisfied with the fact that the structure of these plants is highly beautiful, and that

* 'Gardener's Chronicle,' 1844, p. 23.

† 'Vegetable Kingdom,' p. 600.

many of them are the pets of the florist, who does not know of or care for the poisonous principles lurking beneath the curious, beautiful, or highly perfumed structures, or indeed the many useful remedial agents they may be made to yield.

CONTAGIO-INFECTIOUS PLEURO-PNEUMONIA.

By W. Alleyne Cox, M.R.C.V.S., Dublin.

(*Continued from p.* 756.)

Contagion is the most prolific cause of the *spread* of the disease. The restrictive measures adopted by Government, although serviceable if carried out as passed into law, are either stultified by the action of local authority or by the arbitrary selfwill or want of knowledge of those in whose hands the execution of such orders is placed. This last observation, severe as it may appear, I maintain, and it applies especially to Ireland.

I have stated that animals that have been in contact with those which are diseased are allowed to be shipped from Ireland; to this may be added, the short duration of the restrictive period—three weeks—renders it useless as a safeguard against further outbreak.

Professor Ferguson, in a collated report upon the recent outbreak of this disease in Norfolk, states that instances have come under his notice of animals which, he infers, have contracted the disease at fairs or markets, and it has appeared in ten days subsequently, and even within that time. He is particularly fortunate in being able to quote these cases as the result of his practical experience. I can assure him that its appearance so quickly after the introduction of the contagium into the system is exceptional, nor will those practically acquainted with the disease accept his period of ten days as the average time of incubation.

As furnishing data in this disease official experience is of no value; it is tinged with prejudice; there is not sufficient disease for officers to form definite conclusions.

Professor Ferguson stated that he does not treat cattle nor does he allow those who by his courtesy are allowed, although inspectors, to practise, to treat them; how, then, can they obtain experience of disease? Not on the staff, for during the period I was on that duty I saw but few cases of the disease, and others, I believe, saw fewer.

Although it is a digression, I cannot help stating that

many appointments on the Irish staff are filled by men who are not graduates of any veterinary school; those who are must be docile and obsequious, or their stay will be short. An inspector, who was specially recommended by the director, acknowledged (he was on oath) that he had seen but *one* case of contagious disease, that was after death, and subsequently to his appointment as inspector.

Dust is thrown into the eyes of the authorities by the statement that "vets." cannot be got. I do not wonder at it. If the peculiar system were understood, they would get none. If this is considered ambiguous, I can, if requisite, give a full explanation.

All outbreaks of pleuro-pneumonia do not originate from contagion, nor are the majority of outbreaks in Irish cattle attributable to their having been, previously to their embarkation, in contact with affected animals.

Every animal possesses, *per se*, a fermentable element that only requires the stimulus of certain agencies to develop contagious or infectious maladies. It is admitted that these causes do not come into operation so frequently in this country as in some others, but still they do occur, and some seasons are prolific in their development compared with others.

Restrospective history proves that they originated spontaneously, by crowding together, by the excitement of driving, or from changes of locality, or change or insufficiency of food. Irish cattle are subjected to many of these causes. They are driven to fairs, packed closely together in railway trucks, these probably not properly cleaned or disinfected, placed in strange lairs, or immediately shipped on their arrival at port and again crowded together in the vessel; surely these causes are sufficient to originate disease, and its subsequent development and exhibition are only a question of time.

If these animals, on their arrival in England, are tied up for stall-feeding, noxious vapours, insufficient ventilation, and the influence of damp sheds where there is a development of fungi, accelerate the progress of the disease.

Pleuopneumonia is more frequent in seasons of luxuriance, when the rainfall is in excess and decomposition is rapid; the air becomes loaded with particles of matter specially fitted to act, when introduced into the system, upon its ferments, and thus develop disease.

In these seasons animals at pasture are constantly wet; cold succeeds cold, followed or associated with fever; animals so affected being subjected to the influence of air loaded

with impurity, the symptoms assume a malignant aspect, and the disease becomes of an infectious or contagious character. In the human family this is of frequent occurrence, and doubtless it occurs in a similar manner in the lower animals.

An experience of more than twenty years, and a reference to my case-book, tell of numerous instances where pleuro-pneumonia has appeared spontaneously. In these cases, and they are not exceptional, the disease had not existed in the district; no fresh purchase had been made for years, nor had animals suffering from the disease been driven on roads near; in fact, every inquiry failed to point to contagion as being the cause. These were proved cases of the contagious type; the malady spreading, and the diagnosis being authenticated by *post-mortem* examinations.

Acknowledging that this malady is spontaneously developed, it occurs to ask, is inspection of value in its suppression? This question I purpose answering in a future communication.

EXTRACTION OF TEETH IN THE HORSE.

By A. H. Santy, M.R.C.V.S., Norwich.

I send you a few remarks on the extraction of molar teeth in the horse, which perhaps may be interesting to some of your readers. I have of late years in all my examinations of horses for soundness carefully examined the molar teeth, and in a great many instances have rejected them on account of one or more being decayed, and numerous animals have been brought to me reported as not doing well, in fact sinking daily; in many of these cases (of which I could, if necessary, give you the whole history, dates, &c.) I have been able to detect one or more decayed molars and have extracted them; the animals have in a very short time begun to gain flesh and do well. I do not mean to infer that there is anything new in horses' having decayed teeth, but I think they have not been looked for, and I think I may add that it has been thought by many impossible to extract them, especially the fifth and sixth molars, and it is very strange and to me unaccountable that in nearly all the cases it is the fifth molar on the lower jaw, either on one side or both, that is decayed; occasionally the sixth, sometimes the third or fourth, but, as I said before, most frequently the fifth.

They do not as a rule decay on the crown of the tooth as in the human subject, but mostly on the inside next the tongue you find the gum of the decayed tooth shrunk away, and between it and the other a depression generally filled with food; much fœtor is present, and you cannot well mistake the the tooth, as the gum is shrunk away on either side and easily bleeds, and you are enabled to get well hold of the tooth with your fingers. These teeth are generally to all appearance firm to the touch, though sometimes they seem a little lower in the jaw than the rest, but are very rarely loose. Having decided that there is a decayed tooth and that it is the cause of the animal doing badly, there is no doubt in my mind that it ought to come out. I proceed to cast the animal, and when in a proper position I introduce Professor Varnel's screw balling iron and carefully adjust a pair of strong forceps well down on to the tooth, making sure to get hold of the right one, and not partly hold of two. I then give one or two side wrenches, and an assistant quickly places a piece of iron resting say on the fourth molar under the rivet of forceps, and with all my force I try to elevate the tooth, and very rarely fail to do so. You will tell the moment you have raised the tooth by the peculiar sucking noise which you would naturally expect to hear, but although you have raised the tooth you have not extracted it on account of the length of the organ and the acuteness of the angle formed by the jaws. The only thing that remains to be done is for your assistant to remove the iron; take another hold of the tooth lower down with the forceps and give a little side twist, and the tooth will come out. Sponge the mouth out with tepid water, and apply a little compound tincture of myrrh if thought necessary. Have the animal fed on soft food for a few days. The wound will soon granulate, the animal will rapidly improve, and in a short time you will receive the thanks of the owner, as I have frequently done, independently of my fee.

I will relate one case, certainly to me the most interesting of any. On the 26th June last I bought a six-year-old chestnut mare, about 14·3, a splendid hack both to drive and ride. She was not in good working condition, having rather too much body and being too fat. I put her in a loose box, gave her some purgative medicine, and had her regularly exercised. At the end of a fortnight I began to take her into work. She continued to work until July 17th, when she all at once was taken with a slight running from the near nostril; the submaxillary glands swelled on that side; there was very slight tenderness of throat; loss of appetite, which soon passed away.

In twenty-four hours from first noticing her there was a most copious discharge of matter from the near nostril, and I concluded that an abscess must have formed somewhere in the nasal chamber and burst. I put her in a loose box, steamed her nose, &c.; the discharge abated somewhat, but was always there. I became impatient, thinking it would become a case of glanders. I showed the animal to a brother veterinary surgeon and told him I thought of trephining; he said, "Do not be in a hurry." It struck me there might be something wrong with the molars. I examined her and found the fourth superior near-side molar (which I send you) with a depression on the outside, and slightly raised from the surface of the other teeth; there was slight fœtor from the food lodging there. I at once cast the mare, and with some difficulty extracted the tooth, dressed the wound, nursed the animal for a little while, and in ten days all discharge had ceased. I have the mare now in constant work.

VETERINARY OBSTETRICY EXTRAORDINARY.

By "Observer."

It is seldom such a case as I am about briefly to record falls under the notice of members of the profession; but, as the question was sifted on oath in a court of law, we may vouch for the observations I shall offer.

A practitioner, who prides himself on being a disciple of the late Professor Dick, and yet assumes the title of M.R.C.V.S.E., stated on oath that he examined a cow about the beginning of May, with a view to learning if she were in calf, as the animal had been purchased some time previously as being so. He said that the cow was then carrying a *dead calf*, and no doubt the latter had been dead *about six weeks*.

The writer of this note was instructed by the seller of the cow to examine her a few days after, but was not permitted by the purchaser to examine in any other way than was adopted by the Scotch pupil, which he declared was by *feeling the hide of the cow*, and remarking a staring coat, &c.

This of course put a stop to any examination on my part, but it was arranged between the parties—buyer and seller—that the Scotch pupil and myself should meet for the purpose

of exploring the animal as we thought best. The practitioner did not, from causes best known to himself, meet me.

The cow was examined by him about the middle of May, and he then declared that the calf was *alive!* The animal either died a natural death or was slaughtered a few days subsequently to his second examination, and the parts were so offensive that the horse employed, as well as the men, for the purpose of removal of the carcass seemed to loathe the act.

I repeat that what I have written was given as evidence in a court of law in my hearing.

I do not know that there is any necessity for comment, as the statement I have made will speak for itself.

VETERINARY TITLES.

By Professor Williams, New Veterinary College, Edinburgh.

I QUITE agree with "Observer's" opinion that the title "Royal" Veterinary College, Edinburgh, is assumed; but if "Observer" will consult the Register of the profession he will find that the teachers connected with that establishment are men *not* educated in Scotland. What about the large share of brass?

[It is satisfactory to receive the admission that the title "Royal" *is assumed;* but we do not see that the fact of the teachers' having been educated at the Royal Veterinary College accounts for the assumption.—Eds.]

VETERINARY TITLES.

By "Mackcam."

If "Observer" will refer to the Charter of the Royal College of Veterinary Surgeons he will have an opportunity of observing whether or not the graduates of the Scotch or other schools affiliated to it, after obtaining its diploma, may with propriety append the letter "L" to the letters "M.R.C.V.S.," and also I think he will have an opportunity of satisfying himself as to the right of the Edinburgh Veterinary College of using the word "Royal" as pointed out by him.

At one time I was content to call myself "M.R.C.V.S.," but a graduate of the London school told my friends that,

having studied in Scotland, my papers did not entitle me to call myself anything but "M.R.C.V.S.E." Another veterinary surgeon, in a friendly way, said to me, it was a pity I was not a "M.R.C.V.S.," that he had understood I was, but had looked at the Register, and had been surprised to find "Edin." after my name.

These gentlemen confound the "R.C.V.S." with the Royal Veterinary College, London.

Suppose, as "Observer" does, a school in New York affiliated to the "R.C.V.S.," and a graduate of that school to obtain the diploma of the "R.C.V.S.," what is more natural than to call himself "M.R.C.V.S.L.," that the citizens of the republic might know it was not the "Royal" of Berlin or Timbuctoo that he honoured by using?

Pathological Contributions.

CATTLE PLAGUE.

Cattle Plague exists, according to the last returns, in the quarantine stations in Buckowina and Skata in Galicia, and on the military frontiers of Croatia Sclavonia. Hungary Sclavonia, and Croatia are, however, reported to be free from the disease. The malady also prevails in several districts in Poland. In the government of Lublin eight districts are infected.

Russia has been heavily visited during the year, cattle plague having prevailed in the following governments:—Volhynia, Kursk, Minsk, Mohilew, Orel, Pensa, Poltawa, Saratow, Tombow, Jaraslow, Bessarabia, Katka, Kasane, Novgorod, Simbirst, Tuer, Tobolsk, and Ural.

FOOT-AND-MOUTH DISEASE.

This affection, although declining in one or two places, is still extensively prevalent all over the kingdom. Ireland is sending over large numbers of diseased and infected animals, which are, as a matter of course, moved by rail and road through the country.

Local authorities are asking for powers to stop fairs and markets for a time in the hope that the progress of the disease may thereby be arrested in particular districts. We do not hear, however, anything like a general demand for the establishment of regulations which would be likely to prove effectual throughout the kingdom.

The *Times* of October 26th, having in a leading article laid down the maxim "that there is no kind of doubt with regard to the practicability of extinguishing the disease," makes the following suggestions relative to the movement of animals to large markets:

"Where there is a great traffic from some railway station to some particular market, that traffic should be confined to a single road, which should be fenced with a quickset hedge like a railway, for the protection of the animals grazing by its side. In the market itself and in the lairs suspected cattle should be kept apart and be supervised by a different set of officials."

An underground railway from the railway stations to the market would be more effectual and quite as practicable as the single road with a "quickset hedge."

It is quite true that foot-and-mouth disease may be extinguished, but at a cost which no one likes to contemplate.

PARASITIC BRONCHITIS IN CALVES.

An interesting specimen of the trachea of a calf with part of the lung attached has been received at the College from Messrs. Farrow, of Durham. Whilst still fresh it was exhibited at Dr. Cobbold's class, and showed numerous examples of the hoose-producing *Strongylus micrurus*, as well as a highly inflamed condition of the larynx. As some experiments are being made with the ova, we hope to be able to recur to the subject in our next issue.—Eds.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"Return of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the month of September, 1875, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

"Also, whether the Foreign Ports from which the Animals are brought are in Scheduled or Unscheduled Countries, and the Number of Healthy Animals brought in the same Vessels with the Diseased Animals, and the mode in which such Healthy Animals have been disposed of, whether by slaughter or otherwise.

SCHEDULED COUNTRIES.

Ports in Scheduled Countries from which brought.	Ports in Great Britain to which brought.	Disease.	Diseased Animals.						Healthy Animals.*					
			Number of Diseased Animals.					Disposal.	Number of Healthy Animals brought in the same Vessels with Diseased Animals.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.		Cattle.	Sheep.	Goats.	Swine.	Total.	
Boulogne . .	London . . .	Foot-and-Mouth	...	...	...	22	22	Slaughtered under the instructions of the Privy Council.	...	...	...	201	201	Slaughtered under the instructions of the Privy Council.
Bremen . . .	„	„	41	23	...	...	64	Ditto	427	669	...	...	1096	Ditto
Bremerhafen .	Hull	„	6	4	...	...	10	Ditto	383	432	...	...	815	Ditto
Cherbourg . .	Portsmouth . .	„	...	...	...	25	25	Ditto	...	...	...	242	242	Ditto
Dunkirk . .	London . . .	„	...	...	...	15	15	Ditto	...	...	...	48	48	Ditto
Hamburg . .	Goole	„	...	5	...	...	5	Ditto	...	202	...	...	202	Ditto
„	Hull	„	6	...	...	...	6	Ditto	239	82	...	8	329	Ditto
„	London . . .	„	24	4	...	...	28	Ditto	40	509	...	...	549	Ditto
Havre . . .	„	„	11	...	...	...	11	Ditto	207	...	...	...	207	Ditto
Total Diseased Animals . .		Foot-and-Mouth	88	36	...	62	186	Total Healthy Animals .	1296	1894	...	499	3689	

* 'Healthy Animals' means Animals which were not found to be diseased on inspection on landing.

UNSCHEDULED COUNTRIES.

Corunna . .	Plymouth . .	Foot-and-Mouth	9	...	...	...	9	Slaughtered under the instructions of the Privy Council.	53	...	...	...	53	Slaughtered under the instructions of the Privy Council.
„	Portsmouth . .	„	7	...	...	...	7	Ditto	101	...	...	...	101	Ditto
Harlingen . .	London . . .	„	...	4	...	...	4	Ditto	85	1242	...	...	1327	Ditto
Niew Dieppe .	„	„	...	...	...	50	50	Ditto	...	...	...	336	336	Ditto
Oporto . . .	„	„	15	...	...	...	15	Ditto	235	...	...	...	235	Ditto
Rotterdam . .	Harwich . . .	„	...	9	...	...	9	Ditto	76	3689	...	...	3765	Ditto
„	Hull	„	3	...	...	...	3	Ditto	73	...	...	...	73	Ditto
„	London . . .	„	1	222	...	108	331	Ditto except 9 pigs which died at the place of landing.	33	22787	...	2280	25100	Ditto
Total Diseased Animals .		Foot-and Mouth	35	235	...	158	428	Total Healthy Animals .	656	27718	...	2616	30990	

* 'Healthy Animals' means Animals which were not found to be diseased on inspection on landing.

"Veterinary Department, Privy Council Office, October 12th, 1875." "ALEXANDER WILLIAMS, *Secretary*.

Facts and Observations.

A Prolific Cow.—At the sale of the late Mr. T. Grimwood's stock, Bredfield, on Friday, October 1st, 1875, a Suffolk cow was sold which had had six calves in twenty months, all living. The first birth was three (all fine-grown animals, then one, and just before the sale two more, which were brought into the ring in the arms of labourers, the cow being decorated with blue ribbon. The three twins (to use the Irishman) were sold for £28.—*Ipswich Journal.*

Condition of the Iron in Blood. By Paguelin and Joly (*Compt. Rend.*, lxxviii). — Fourcroy, Enderlin, and Boussingault consider the iron to exist as ferric phosphate; according to the authors it exists as ferrous phosphate. When ferric phosphate is calcined with cream of tartar or sugar a loss of phosphoric acid is experienced, differing in amount with the time, &c.; hence results based on calcination processes, like those of the three first chemists, are untrustworthy.—*Journal of the Chemical Society.*

On the Chemical Examination of Water. By H. Kämmerer (*Chem. Centr.*, 1874, 233).—Nitrous acid is recognised by the colour produced in a solution of starch and potassium iodide, to which a pinch of zinc powder and dilute acetic acid have been added. When nitrous acid is absent, the same mixture serves for the detection of nitric acid by the simple addition of sulphuric acid.—*Journal of the Chemical Society.*

Opium Testing. By C. Arnoldi (*Chem. Centr.*, 1874, 54).—500 grams of dry opium are digested in 3 oz. of distilled water for twenty-four hours; the liquid is poured through a weighed filter, and the insoluble part again digested with the same quantity of water for the same length of time. The insoluble part is then collected on the filter, washed with water so long as the washings are coloured, dried, and weighed. Good opium should not leave more than 200 grams of insoluble residue.

The solution is concentrated to 5 oz., filtered, shaken with bone-char, and again filtered; to the liquid a slight excess of ammonia is now added, whereby a precipitate of impure morphine is obtained; and this precipitate, after warming to expel excess of ammonia, is collected and weighed. Good opium yields 14—19 per cent. of impure morphine. —*Ibid.*

Iodide of Albumen (*Pharm. Zeitung*, April, 1875, p. 236). —On account of the irritating effects of iodine on the organism, it is rarely used in the free state. With a view of modifying this objectionable feature it is usually combined with some such substance as starch or syrup of orange peel. Collas has lately recommended its combination with albumen. In this combination the iodine is completely masked, and its presence can only be demonstrated by destruction of the compound; further, it is present in a constant and known proportion. The iod-albumen is obtained by strongly agitating a solution of albumen with iodine in solution or fine powder. The originally dark-brown mixture becomes pale after standing one hour, and no longer gives a violet colour with starch paste. The product is dried by gentle heat in a drying closet, and for medicinal use is brought into the pilular form. The manipulation is such that each pill contains 5 mgr. of iodine. According to medical testimony, iodine used in this form has not been known to fail, and may be taken for a week without causing disturbance of the digestive or other functions. The dose is five to six pills daily.

Tincture of Arnica.—Dr. James White, in the *Boston Medical and Surgical Reporter*, mentions three cases in which he has found the use of tincture of arnica as a lotion for bruises produce serious attacks of acute eczema, and he believes that similar poisonous results are more frequent than has been supposed. Whatever benefit may be derived from the employment of tincture of arnica Dr. White thinks due to the alcohol it contains, and it seems almost time that a more harmless root with an equally well-sounding name should take the place of this dangerous preparation in fashionable medicine-chests. Hebra a long time ago protested against the use of this pretended remedy, and Tilbury Fox has called attention to its irritating qualities. It remains to be said, however, that a medicine which can do harm can always also do good; but an unbiassed series of experiments on the action of arnica would be a useful work for an active and intelligent young surgeon to undertake, and he need not enter on the slippery paths of vivisection to make them.

THE VETERINARIAN, NOVEMBER 1, 1875.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

HOW IS PLEURO-PNEUMONIA SPREAD?

THE following paragraph, from the *Oswestry Advertiser*, deals with an important point on which we have before expressed an opinion:

"A correspondence which was laid before the Shropshire Court of Quarter Sessions, on Monday, shows how much has yet to be decided before it is possible to deal satisfactorily with contagious diseases. The first letter is from Admiral Cotton, of Alport House, Whitchurch, who writes to the Home Secretary to state that the carcasses of animals which have been affected with pleuro-pneumonia are carried away from the place of slaughter, together with the offal, to a knacker's yard or elsewhere; and to point out that in the Admiral's opinion the disease is thereby propagated, To this a reply, signed 'C. Eardly Wilmot, secretary,' is sent, informing Admiral Cotton that his letter has been submitted to the Lords of the Council, and that 'the highest veterinary authorities in the country concur in the opinion that pleuro is only propagated by direct exposure to the breath of the living affected animal.' Letter number three is from Mr. Litt, of Shrewsbury, a veterinary surgeon of wide experience, who suggests that 'some mistake' has been made at the Privy Council Office, and proceeds to express his opinion that pleuro-pneumonia 'can be and is propagated in many ways, both by the living affected animals and by those which have been slaughtered or have died of the disease.' Next we have a letter from the Chairman of Quarter Sessions to the Secretary of the Veterinary Department of the Privy Council, calling attention to the 'serious and remarkable' difference of opinion between Mr. Litt and the veterinary authorities quoted in answer to Admiral Cotton, and suggesting that those authorities should consider the matter. The secretary, in reply, informs Mr. Kenyon that the authorities adhere to their opinion, and finally Mr. Litt, in a second letter, adheres to his. Unhappily, the correspondence at the end leaves us just where we were at the beginning; but it seems desirable, as long as doctors disagree, to keep on the safe side, and

avoid carrying the carcasses and offal from place to place. Mr. Kenyon has accordingly given notice that at the next meeting of the executive authority he will bring forward a new regulation to that effect."

We do not gather from the published reports of the meeting of the Shropshire Court of Quarter Sessions what are the grounds on which Mr. Litt bases his opinion—that pleuro-pneumonia may be propagated in many ways, both by living and dead animals. All the evidence before us is to the contrary; indeed, as we stated in our report on the result of experiments which were conducted at the Royal Veterinary College a few months back, we have always failed to induce the disease in any of the ordinary ways, short of actual cohabitation.

Professor Baldwin stated to the Select Committee of the House which met in 1873, on the subject of the Cattle Diseases Act, that he had produced pleuro-pneumonia by transferring a little cotton-wool from the nostrils of a diseased to those of a healthy cow; it was elicited, however, that he had only tried the experiment in an infected herd. In our hands the same experiment, conducted with every care to prevent infection by other means, failed. Different morbid products of pleuro-pneumonia from the dead subject have been introduced into the system of healthy cattle in every case without result; and we were driven to the conclusion, against our previous convictions, that pleuro-pneumonia only extends its area in the one ordinary and recognised way, that is to say, by contact taking place between healthy and diseased animals.

No limits can be set to possibilities, and we are, then, prepared to admit that lung-disease *may* be propagated in various ways; but the practical question is, how is it propagated? The one method of communication we know is certain enough. What can be said in proof of the existence of other ways?

The matter is important to the veterinary pathologist, and a vast amount of evidence bearing on the matter must be in the possession of the members of the veterinary profession, who could do good service by publishing the results

of their observations. For expressions of opinion, as the phrase goes, we care little. What we want are facts. At present, we repeat, these tend to prove that pleuro-pneumonia is not spread in various ways, but mainly, if not entirely, in the one way which we have referred to. We shall be ready to hear and to make public all that can be advanced on the other side of the question.

Extracts from British and Foreign Journals.

THE MICROSCOPIC GERM THEORY OF DISEASE; BEING A DISCUSSION OF THE RELATION OF BACTERIA AND ALLIED ORGANISMS TO VIRULENT INFLAMMATIONS AND SPECIFIC CONTAGIOUS FEVERS.

By H. Charlton Bastian, M.D., F.R.S., Professor of Pathological Anatomy in University College.

When honoured by a request from the Council of this Society,* a few weeks since, to open a debate during the current session, compliance with such a wish was regarded by me as a professional duty. I was compelled, therefore, to do the best I could with the short time and limited leisure which presented themselves, though these, I regret to say, have proved insufficient to enable me to bestow the attention I should have desired upon the vast accumulation of writings directly or indirectly related to the subject selected for discussion, and quite insufficient also to enable me to throw light upon it, to the extent I should have wished, by certain new observations of my own. The subject, however, large as it is—and consequently difficult to be dealt with satisfactorily in the space of one hour—seemed to recommend itself for several reasons: (1) It is a question lying at the root of the pathology of the most important and most fatal class of diseases to which the human race is liable—diseases which cause nearly one fourth of the total number of deaths in this country. (2) It is a subject important alike to those engaged in almost every department of our profession. And (3) it is one which I happen to have very carefully con-

* An address delivered before the Pathological Society of London.

sidered for several years, and for the elucidation of which I was tempted in 1869 to undertake long and laborious investigations, though these may have seemed to many to have little practical bearing upon the science of medicine.

The subject of the relation of the lower organisms to disease has, moreover, a growing importance. The notion that there is a distinct causal relation between the two—though it has long existed in one form or another—is one which has been spread enormously within the last few years, partly owing to our increase of knowledge concerning those low organisms, and partly because of their ascertained presence in numerous diseased tissues and exudations. Medical literature both at home and abroad now, in fact, teems with papers and memoirs bearing upon this relation, and such communications rapidly increase in number year by year.

In the short time allotted to me to open the debate, I shall be able to make specific allusions to but few of these contributions, as it would seem better to keep the broad issues well in view in my opening statement, and reserve questions of detail, as these may be taken up by other speakers and subsequently commented upon if necessary.

The one common and distinguishing feature peculiar to all the diseases whose pathology we are now about to consider is their "contagiousness." An individual affected by either of them throws off particles from the region specially affected, or from many parts of the body, and these particles, on coming into contact with suitable surfaces in other persons, may incite similar local or general diseases, though such results do not invariably follow. This peculiarity, by means of which such diseases are spread amongst the members of a community, was, even in the time of Hippocrates, compared to the property by which one fermenting mass may communicate its state of change to another mass of fermentible material. Throughout all intervening periods such an analogy has never been lost sight of; it has rather been more and more strongly dwelt upon. Thus, more than two centuries ago, we find, as has been recently pointed out, Robert Boyle, one of our great English philosophers, and himself a pioneer in scientific investigation, giving strong expression to the then current view: "He that thoroughly understands," he says, "the nature of ferments and fermentations shall probably be much better able than he that ignores them to give a fair account of several diseases (as well fevers as others) which will perhaps be never thoroughly understood without an insight into the doctrine of fermentation." Again, in more recent times, it was doubtless under the influence of a belief

in the same analogy between fermentations and the class of diseases of which I am about to speak that the term "zymotic" was proposed by Dr. Wm. Farr, and adopted as a general designation under which nearly all these diseases might be included. The consequence of the adoption of this nomenclature has been that views as to the nature of the infecting something, or *contagium*, have since been so powerfully influenced as to be actually led by views at the time entertained concerning the nature of *ferments*—the relationship supposed to exist between zymosis and fermentation has indeed been stamped and ratified by the very general consent of the profession.

Omitting for the present any remarks as to the real strength of this analogy, I would merely further point out that the foundations of the "germ theory of disease," in its most commonly accepted form, were laid in 1836 and shortly afterwards. The discovery at this time of the yeast plant by Schwann and Cagniard-Latour soon led to the more general recognition of the almost constant association of certain low organisms with the different kinds of fermentations. But it was not till twenty years afterwards that Pasteur announced, as the result of his apparently conclusive researches, that low organisms acted as the invariable causes of fermentations and putrefactions; that these, in fact, though chemical processes, were only capable of being initiated by the agency of living units. If, in accordance with this somewhat narrow and exclusive view, living units were to be regarded as the sole producers of fermentation and putrefaction, then they were sole ferments. The extension of this doctrine by medical men to contagious diseases, in face of the analogy sanctioned by the use of the term "zymotic," became only too easy. It was obviously nothing but the logical outcome of the two sets of views to hold that low organisms were the true contagia, or sole "germs" of the so-called zymotic diseases.

It so happens, therefore, that the very exclusive notion just mentioned as to the nature of contagia is at present almost as deeply rooted in the minds of the majority of writers on epidemic diseases and contagious fevers as was the opposite notion, founded upon the physico-chemical doctrine of Liebig, some twenty years ago. Then a ferment was regarded as a portion of organic matter (not necessarily living) in a state of molecular change ("motor decay"), which, by virtue of its own unstable nature, was capable of communicating molecular movement (chemical change) to other unstable or fermentible mixtures. This broader notion was promulgated by Liebig at a time when less was known than

at present as to the constant association of low organisms with the processes of fermentation and putrefaction. The nature of this relationship was, in fact, never adequately grappled with by him. Still, views of the kind promulgated by Liebig would not give anything like the same support to the germ theory of the disease as that afforded by the doctrines of Pasteur. Those who have adopted and developed Liebig's views now hold that living organisms, though they may operate as ferments, act in this capacity merely by virtue of the chemical changes which the carrying on of their growth necessitates; and that other chemical changes taking place during the decay of organic matter may make fragments of it (in the dead state) almost equally capable of initiating fermentative changes in suitable media; whilst in either case bacteria or allied organisms are prone to be engendered as correlative products.

In the present day, therefore, two questions seem to need the serious consideration of medical men. In the first place, it may be asked, Are we justified in relying so strongly upon the analogy between fermentation and zymosis? Secondly, we may inquire whether the researches by which Pasteur claims to have established the sole nature of ferments are so conclusive as they have been commonly regarded? In reply to the first question, certain qualifying considerations will hereafter be stated, though it may be at once admitted that the analogy is so strong as to make it likely to continue to exercise a very considerable influence upon medical opinion. It therefore becomes all the more necessary for medical men to look to the foundations of Pasteur's doctrine, if they are not prepared blindly to follow his dicta on a subject which is of so much importance for medical science. It was with this view that I undertook, a few years ago, and shortly after I had been called upon to teach pathology, a series of investigations bearing upon this subject. In consequence of this work I was compelled, as others had been, to refuse assent to the exclusive doctrines of Pasteur concerning the nature of ferments. I do not enter upon this discussion now. I maintain, however, that my own investigation and those of others show that units of living matter are not sole ferments, since fermentation and putrefaction may be initiated in their absence, and since it can be shown that mere particles or fragments of organic matter may act in this capacity. For a brief exposition of the grounds of this belief I would refer those interested in the matter to my recently published work, 'Evolution and the Origin of Life.'

Some time must be allowed to elapse before anything ap-

proaching to general agreement can be expected on such a subject; and meanwhile, standing as we do in the face of opposite doctrines as to the nature of ferments, we are free to look into the question of the relation of the lower organisms to disease on its own merits, apart, that is, from the overweening influence of any general theory of fermentation.

Leaving on one side, therefore, the influence of the analogy deemed to exist between the process of fermentation and that of zymosis, we may ask what other general evidence is forthcoming in favour of the notion that contagia are low organisms or living units, rather than dead organic particles from altered tissue-elements, or complex chemical compounds of alkaloidal constitution engendered in the tissues or in some of the fluids of the body. The consideration of this question may be introduced by a quotation from Dr. Burdon-Sanderson's valuable Report on the "Intimate Pathology of Contagion."* He says: "There are two obvious objections which stand in the way of the acceptance of any chemical explanation of the phenomena of contagion. The first is, that the multiplication of contagium in the body of the infected individual is a process which cannot be compared to any which is brought about by chemical agencies independently of organic development. The second is, that all contagia possess the power of retaining their latent virulence for long periods (often resisting the most unfavorable chemical and physical conditions), and only show themselves to be what they are when they are brought into contact with [the] living organism. Outside of the body the contagious material withstands all those changes to which, on chemical grounds, we should expect it to be liable; while in the body it manifests a degree of activity, and gives rise to an amount of molecular disturbance, which is quite as unaccountable. . . . . Neither of these difficulties stands in our way if we suppose that the contagious process is connected with the *unfolding of organic forms.*"

Now, though this is about as strong a statement as can be made, from an *à priori* point of view, against the mere chemical action of contagium, and in favour of a germ theory, I must confess that neither of the considerations seems to me to carry very much weight with it. I should be inclined to say in reply (1), that proof is altogether wanting of the "multiplication of contagium" in the body in the same sense that a living unit multiplies; and that there are physico-chemical processes which may illustrate what occurs when

* 'Twelfth Report of the Medical Officer of the Privy Council,' 1870, p. 243.

contagium increases within the system. Instead of being an increase by continuous organic development and multiplication, it may be that contagium augments by some such process as that by which crystals of sulphate of soda increase or "multiply" when a fragment of such a body is thrown into a complex fluid containing its component elements. This is confessedly a very imperfect illustration, and one to which I resort merely to indicate the possible occurrence of another mode of increase of contagium within the body; though in an infected animal such increase may occur in a much more subtle manner, owing to the fact that fluids altered, directly or indirectly, by the original contact of contagium with some part of the body, are either locally or generally brought into intimate relation with the active, though modifiable, living units of the various tissues. And (2) in reply to Dr. Sanderson's other objection, which stands, as he supposes, in the way of any chemical explanation of the phenomena of contagion, I should say that, although our knowledge is at present extremely vague concerning the power possessed by the various contagia of retaining their virulence for long periods, and of resisting unfavorable physical and chemical conditions, we have no reason to believe that the more complex combinations of which living matter is composed are capable of resisting influences which would prove destructive to less highly complex not-living substances, such as snake-poison, woorara, or other compounds of this class. The general evidence is therefore, as I read it, certainly not more favorable to a vital or germ theory than to a physico-chemical theory as regards the nature and action of contagia.

I should here point out, however, that under the term "germ theory" two distinct views are included, each having their advocates amongst distinguished members of this Society. The side to which Dr. Sanderson leans is sufficiently obvious. Speaking of contagious particles, he says:* "With reference to their mode of action, we have examined into those considerations which seem to render it probable that they are *organized beings, and that their powers of producing disease are due to their organic development;* and we have accepted this doctrine as the only one which affords a satisfactory explanation of the facts of infection." †

* Loc. cit., p. 255.

† These words occur in a summary which, it is only right to add, was immediately prefaced by the following statement: "The sentences which follow must therefore be accepted by the reader as nothing more than indications of the questions we are trying to solve, or as forecasts of what we hope to establish or disprove by experiment."

This is the doctrine with which we are at present especially concerned, though it may be well for me to say a few words concerning the other sense in which a "germ theory of disease" is maintained by a distinguished member of this Society. Dr. Beale says:* "We have therefore now to inquire what is the material substance which passes from the diseased to the healthy organism in smallpox, in measles, in scarlet fever, and other allied contagious diseases from which man and domestic animals suffer so severely. *The material in question grows and multiplies and produces its kind, as all living things do,* and as nothing that does not live has been proved to be capable of doing. We may therefore conclude that it is living matter." And as to the derivation of such matter, Dr. Beale says, "a disease germ is probably a particle of living matter derived by direct descent from the living matter of man's organism," though he supposes it to be altered and degraded as regards formative power by previous rapid multiplication of the tissue-elements or particles from which it has been derived. In many respects I am disposed to assent to this view, so long as it is not taken in too exclusive a sense. I will now, however, only mention what I consider to be its weakness. It seems to me that proof is wholly wanting as regards the statement which I have had printed in italics. That there is an enormous increase of germinal particles in the blood and in many of the tissues in these specific contagious diseases, Dr. Beale has helped to show us by his valuable researches upon the pathology of the cattle plague and other allied affections; but that such germinal or living particles are in any direct sense the descendants of the particles which acted as contagia, or, in fact, that the contagious particles really multiply to any extent in the body; these are propositions which at present appear to me to be wholly devoid of all proof. I and other pathologists are free to hold that contagious particles, whether composed of living or of not-living organic materials, may initiate changes in the tissues and fluids with which they come into contact, which changes may be exaggerated as they spread, so as at last to implicate the blood. And as one result of this altered constitution of the nutritive fluid and of the general febrile condition simultaneously excited, we may get that undue proliferation of tissue-elements and multiplication of their products which appear to go on in the blood and in the various tissues of persons suffering from these febrile diseases. Beyond these surmises we seem also to have to do with mere conjecture rather than with established facts.

* 'Disease Germs, their Real Nature,' 1870, p. 5.

Leaving this aspect of the question, therefore, I now turn to the special subject of this debate, viz. the truth of the germ theory as it is ordinarily understood, or the relation of the lower organisms to virulent inflammations and their sequelæ on the one hand, and to specific contagious fevers on the other.

Applicability of the germ theory to virulent inflammations and their sequelæ (gonorrhœa, purulent ophthalmia, erysipelas, hospital gangrene, puerperal fever, pyæmia, septicæmia, &c.).

A few years ago no one would have thought of connecting the contagiousness of gonorrhœa or of purulent ophthalmia with the presence of bacteria. The respective secretions were known to contain some poisonous element either in the form of a chemical compound or altered product of tissue multiplication (pus), which, when it came into contact with a healthy mucous membrane, was capable of acting as a specific irritant, and there exciting a similar morbid process. It is by no means certain, however, that some pathologists would not at the present time connect this process with the presence of bacteria in the contagious fluids. Such a point of view has, indeed, been directly fostered by doctrines recently put forward by an eminent pathologist, Dr. Burdon-Sanderson. At this Society in 1871, whilst, strangely enough, professing to be indifferent to the mode of origin of bacteria, Dr. Sanderson said: "They afford a characteristic by which we may distinguish the products of infective inflammation from those which are not infective." And in a more recent paper on "The Infective Product of Acute Inflammation," * referring to his previous researches, he says it was inferred from these that, "if infective agents are particulate, they are probably comprised in that group of bodies to which I then applied the term microzymes, recognising their identity with the *zooglœa* of Cohn, the *micrococci* of Hallier, and the various forms described by other authors under the terms *bacterium* and *vibrio*." And he then adds, as the result of subsequent investigations, the following passage: "With reference to these organisms, two entirely new and most important facts have been demonstrated by the observations to be now recorded. It has been discovered (1) that in all acute infective inflammations microzymes abound in the exudation liquids; and (2) that the same forms are to be found in the blood of the infected animals." And when Dr. Sanderson subsequently adds "that the relation of intensity

* 'Medico-Chirur. Trans.,' 1873, p. 354.

between different cases of septicæmia and pyæmic infection is indicated by the number and character of these organisms," but little doubt seems to remain concerning his views as to the causal relationship of such organisms to the infectiousness of the inflammations referred to. And this view is not essentially modified by his subsequently concluding explanations, where he says: "Inasmuch as these organisms cannot have originated from the normal tissues or juices, they must have been derived from the external moisture." And also, "it does not at all follow because these organisms come in from outside that they bring contagium along with them; for it may be readily admitted that they may serve as carriers of infection from diseased to healthy parts, or from diseased to healthy individuals, and yet be utterly devoid of any power of themselves originating the contagium they convey." Such a doctrine still implies that bacteria are essential to a contagious process, though it seems to me to introduce certain very striking elements of weakness into the germ theory as thus interpreted. If this theory is not tenable without the aid of some supplementary hypothesis, I cannot conceive that the introduction of the one above mentioned will be considered to have strengthened its foundations. Yet Dr. Sanderson apparently saw the difficulty of maintaining the germ theory in its integrity, and offered us this other view as a compromise. He considers it probable that, whereas true contagia, whether living particles or chemical compounds, may be engendered within the body in the tissues themselves, such contagia are not able to spread either within or outside without the aid of bacteria to act as "carriers." But why one set of particles should need others to carry them, or why bacteria alone should be able to bear about these mysterious contagious poisons which they are devoid of the power of originating, does not at all appear!

However complicated the doctrine may have been rendered, this is still practically the germ theory; and the same thing may be said with reference to a view which Professor Lister seems to entertain with some favour. He thinks that the lower fungi and their relations bacteria may contain within themselves some chemical compound absolutely peculiar to them, and forming part of their substance, which may act upon albuminous compounds after the manner of a ferment, such as emulsin.* "In this sense," he thinks, "as intervening between the growth of the organisms and the resulting decompositions, the theory of chemical ferments might be welcomed as a valuable hypothesis." This seems like the

* 'Nature,' July 17, 1873.

language of concession, but, practically, it is the germ theory still, and expressed too much, as all germ theorists who think out their views would have to formulate them. It would be no great concession to those who are not believers in an exclusive germ theory if, in the light of his views as above expressed, Professor Lister were to say that bacteria were "carriers of infection;" yet the apparent concession above referred to is no more of a concession to believers in a physico-chemical theory than the latter admission would be.

I will, however, now briefly enumerate the evidence which seems to me quite sufficient to disprove the probability of the existence of any causal relationship between the lower organisms and the diseases cited at the head of this section, and to establish, on the other hand, the position that the bacteria met with in diseased fluids and tissues are for the most part actual pathological products—that they are, in fact, engendered within the body, or are descendants of organisms owning such an origin, rather than of previously existing organisms introduced from without. It would take far too long were I to attempt to enter at any length upon a consideration of this evidence. I must therefore content myself with briefly summarising the principal facts and arguments on which a judgment may be founded.

1. The experiments of many investigators prove that the alleged causes of diseases may be actually introduced into the blood-vessels of lower animals by thousands without producing any deleterious effects in a large proportion of the cases.

2. Bacteria, if not actually to be found within the blood-vessels of healthy persons, do nevertheless habitually exist in so many parts of the body in every human being, and in so many of the lower animals, as to make it almost inconceivable that these organisms can be causes of disease. In support of this statement I have only to say, that even in healthy persons they may be found in myriads in and about the epithelium of the whole alimentary tract from mouth to anus; they exist throughout the air-passages, and may be found in mucus coming from the nasal cavities, as well as in that from minute bronchi. They exist abundantly amongst the epithelial débris within the ducts of the skin, not only in the face, but in other parts of the body. Fresh legions of them are also being introduced into the alimentary canal with almost every meal that is taken, whence they may perhaps readily find their way into the mesenteric glands, if not farther within the system. And lastly, in persons with open wounds,

bacteria are constantly to be found in contact with such surfaces, especially if the wounds are not well cared for, though the injured person does not necessarily suffer at all in general health.

3. It is no answer to these difficulties to say that there are distinct species amongst these lower organisms, some of which are harmless, though others are poisonous (or so-called "germs" of disease). In support of such opinion nothing can be alleged save some of the facts whose cause is doubtful; whilst against such an interpretation may be brought the experiments of several investigators, showing that bacteria are the creatures of circumstance, and modifiable to an extraordinary degree. The last position is even admitted by Professors Sanderson and Lister. The former acknowledges that they are "the lowest organisms," and that they are "much more under the influence of the conditions under which they originate and are developed than organisms of any other class;" whilst Professor Lister's own work has compelled him to make an admission which, in the face of facts previously stated concerning the wide distribution of bacteria within the body, seems fatal to a consistent belief in the germ theory of disease He says: "If the same bacterium may, as a result of varied circumstances, produce in one and the same medium fermentative changes differing so widely from each other, as the formation of lactic acid and that of black pigment in milk, it becomes readily conceivable that the same organism which, under ordinary circumstances, may be comparatively harmless, may at other times generate products poisonous to the human economy." *

4. The consideration now to be mentioned suffices, in my opinion, to complete the discomfiture of the germ theory as an explanation of the mode of causation of the diseases with which we are at present concerned. It is this. It has been shown, on the one hand, that the virulence of certain contagious mixtures diminishes in direct proportion to the increase of bacteria therein; and on the other hand, it has been equally proved that fresh and actively contagious menstrua lose scarcely any of their contagious or poisonous properties after they have been subjected for a few minutes, when in the moist state, to a temperature which no living units can be shown to survive (212° F.), or after they have been exposed to the influence of boiling alcohol, which is well known to be equally destructive to all recognised forms of living matter. Such facts have been substantiated by Messrs. Lewis and Cunningham, Sanderson, and others.

* 'Quarterly Journal of Microscopical Science,' October, 1873.

Having said thus much in opposition to the germ theory, let me as briefly enumerate the facts and arguments which seem to me to show the real relations of bacteria and their allies to the diseases in question. I turn therefore to the construction of an opposite doctrine.

Admitting in part the very frequent presence of bacteria in diseased fluids and tissues, I consider that their presence and import should be differently explained. I say I admit the association in part, though I by no means admit it to the extent alleged. Bacteria are not, for instance, to be found in the blood of persons suffering from pyæmia, as might be inferred from former statements of Dr. Sanderson, which I have already quoted. My own experience in this matter seems to be entirely in accordance with that of Professors Billroth and Stricker. Neither do I believe that the presence of bacteria in inflammatory fluids has the significance which Dr. Sanderson attaches to it, since it has been ascertained by myself and others that the exudation fluids of sick persons suffering from diseases of a totally different type are often similarly crowded with these lowest organisms, whilst the recent observations of M. Bergeron* seem to show that they may be found even in freshly extracted pus from ordinary abscesses occurring in elderly persons.

Now, it would seem quite obvious that the consistent advocate of a germ theory of disease can only successfully maintain such a doctrine if he can show, amongst other things, that bacteria are more capable of altering the character and chemical constitution of the fluids of the body than they are themselves prone to be altered by independently initiated changes taking place in such fluids. It seems, therefore, like unintentionally cutting himself free from the theory to which he has hitherto adhered, when we find Professor Lister, in speaking of the assumed "special virus of hospital gangrene," going on to say that "it is not essential to assume the existence of a special virus at all, but that organisms common to all the sores in the ward may, for aught we know, assume specific properties in the discharges long putrefying under the dressings." This passage has a similar import to that of a quotation previously made. In both a first place is assigned to the modifying influence of altered fluids; and however much the correctness of such a supposition would tell in favour of cleanliness, free exposure, or even of antiseptic dressings, it is none the less inimical to a consistent holding of the theory on which Professor Lister has chosen to base his system of treatment.

* 'Compt. Rend.,' February, 1875.

But though such statements are adverse to the holding of a germ theory in the only form in which it may be at all tenable, they are entirely in accordance with my own observations and views. I maintain, in short, that even the very existence of organisms in the fluids and tissues of diseased persons is for the most part referable to the fact that certain changes have previously taken place (by deviations from healthy nutrition) in the constitution and vitality of such fluids and tissues, and that bacteria and allied organisms have appeared therein as pathological products—either by heterogenesis, or by what I have termed archebiosis, or birth direct from a fluid.

The evidence on which my belief is founded is of this nature:

1. Bacteria and their allies are found in greatest abundance during the life of the individual in connection with dying tissue-elements, and apparently are as plentiful within the dying epithelium of the cutaneous ducts as in parts like the mouth, which are most liable to contamination with organisms from without. Again, they exist abundantly in and about the dying cells of bronchial mucus, although living bacteria appear to be almost completely absent from ordinary air.

2. The microscopical examination of such epithelial or mucous elements also favours the notion that the contained bacteria are products engendered within such cells rather than mere results of an external contamination and imbibition. This opinion is based upon the following considerations. Bacteria only appear within the cell when it is obviously dying; and in the case of epithelium, for instance, they manifest themselves at first as minute motionless particles scattered through the semi-solid substance of the cell, where each particle grows into a distinct bacterium, which still remains motionless, and does not appear to divide for a long time. This is precisely similar to what I have observed over and over again, when amœbæ in vegetable infusions get into an unhealthy condition and become resolved into nests of bacteria. They may exist for days in a state of activity with bacteria in the fluid around them, though none are to be seen in their interior. After a time, however, the chemical constitution of the fluid seems to become no longer suited to the amœbæ; their activity ceases, they remain as almost motionless balls of jelly, and soon multitudes of the minutest particles appear throughout their substance, each of which straightway grows into a bacterium. The former amœba is converted into a mere bag of bacteria, which after a time ruptures, and thus liberates its swarming colony of newly-

engendered living units. Multitudes of mucus-corpuscles seem to undergo the same kind of change, so that bacterial degeneration takes place in the same manner and is almost as typical amongst them as is fatty degeneration amongst pus-corpuscles. The two kinds of degeneration, moreover, commonly occur side by side in epithelial débris. Bacterial degeneration takes place where the vitality of the unit is lowered, but where it is not sufficiently degraded to permit of the still lower and more obviously destructive process of fatty degeneration; and if any one wishes to see it in perfection let him examine some central portion of the kidney or other internal organ of a warm-blooded animal five days or more after its death.

3. Bacteria are admitted by nearly all pathologists to be absent from the blood of healthy persons during life, and yet in from eight hours to four or five days after death, according to the temperature of the air at the time, the previously germless blood of all individuals may be found to be swarming with these organisms n every stage of growth.

4. Whereas blister fluid or serum has been shown to be free from organisms in healthy persons, I have ascertained that, given a febrile patient with a temperature of 102° F., one can determine the presence of bacteria, at will, in any blister-bleb which remains intact for forty-eight hours or more, and this, too, where the patient does not suffer from any specific fever, but merely from pneumonic inflammation. I was led to ascertain this fact by finding, about eighteen months ago, myriads of bacteria in all the blebs of a patient suffering from acute pemphigus, with a temperature of 103°.

5. Lastly, as Dr. Sanderson has shown, a chemical irritant, such as liquor ammoniæ, may be introduced beneath the skin of some of the lower animals in such a way as to "preclude the possibility of external contamination," and yet here, amidst tissues which he has shown to be germless, we may thus within twenty-four hours determine the presence of swarms of germs and organisms in the pathological fluids effused under the influence of the local chemical irritant.

This constitutes, as it appears to me, an exceedingly strong body of evidence tending to show that bacteria are pathological products capable of being engendered within the body after death, or in certain situations during life where tissue-elements are dying or where the fluids of the body are notably altered by disease. It is true that the facts and considerations mentioned under 1 and 2 are capable of receiving another interpretation. It may be said, for instance, and it

has actually been said by Dr. Beale, that the higher forms of life are, as it were, interpenetrated by the lower forms of life. Speaking of bacteria and their allies, Dr. Beale says: "I have detected them in the interior of the cells of animals, and in the very centre of cells, with walls so thick and strong that it seems almost impossible that such bodies could have made their way through the surrounding medium."* And elsewhere the same observer says: "Probably there is not a tissue in which these germs are not; nor is the blood of man free from them." Noting by the way that this latter statement does not accord with the experience of others, I may further mention that some distinguished pathologists, and notably Dr. Sanderson, are also inclined to dwell strongly upon the fact of the wide distribution of bacteria throughout the body—not believing them to be innate or connate (in the mysterious manner imagined by Dr. Beale), but supposing that they have been introduced from without through certain definite channels.

Dr. Sanderson's views on this subject, and the means by which he supports them, are sufficiently remarkable to detain us a few moments. If what he says† concerning the assumed easy absorption of bacteria from the intestine by lymphatics, and their subsequent passage into the blood, were in correspondence with actual facts, then in face of the habitual prevalence of such organisms in the intestine, the blood of healthy individuals should scarcely ever be free from them. But this is surely proving too much, since Dr. Sanderson himself assures us that healthy blood is germless.

Again, the other main channel by which, as he says, bacteria may enter into the body abundantly from without is through the bronchi and the lungs. Now, as a result of Dr. Sanderson's oft-quoted experiments in 1871, he claims to have proved "in the most striking manner . . . that *air is entirely free from living microzymes.*" Speaking of a previously boiled Pasteur's solution, he says that "no amount of exposure" to air "has any effect in determining the presence of microzymes therein." And yet Dr. Sanderson now talks of the air which is "entirely free from living microzymes" being the channel through which these organisms are introduced into the lungs. It is true that in his recently published lectures this distinguished investigator makes a tacit retraction of his previous statement. He says, in fact, in his first lecture:‡ "It must not be understood

* 'Disease Germs,' p. 72, 1870.
† 'British Medical Journal,' Feb. 13th, 1875.
‡ Loc. cit., Jan. 16th, 1875.

that bacteria do not exist in the atmosphere. But their existence there in an active form strictly depends on moisture. They attach themselves *without doubt* to those minute particles which, scarcely visible in ordinary light, appear as motes in the sunbeam or in the beam of an electric lamp. It is by the agency of these particles that they are conveyed from place to place." Elsewhere in the same lecture* Dr. Sanderson repeats the statement that "solid materials in suspension in the air" play a principal part in the conveyance of bacteria from place to place, and claims that this was shown by the very experiments of 1871, which then entitled him to express the conclusion that "air is entirely free from living microzymes." All I can say is, that I have not been able to find in Dr. Sanderson's writings any explanation of this marked change of view, and that I certainly know of no experiments of his which at all establish the fact (extremely difficult as it would be to establish) that bacteria or their germs are conveyed from place to place on the surface of aërial particles, just as his assumed particles of contagion are supposed to be borne about by bacteria themselves. If the theory be true, the conditions for aërial locomotion of contagion are, at all events, getting a little complicated. The contagious particles cannot move about alone: they must engage the services of bacteria to carry them, and these latter porters are unfortunately so delicately constituted that they cannot exist alone in the atmosphere; they can only survive when borne on the backs of some moisture-containing fragments of atmospheric dust, which, though so much heavier than the contagious particles themselves, are freely borne through the air in all directions!

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD OCTOBER 6TH, 1875.

Present—The President; Professors Simonds and Brown; Messrs. Balls, J. C. Broad, Fleming, Gowing, Mayer, Cox, Moore, Field, Dray, Woodger, Talbott, Greaves, Withers, Cartwright, and the Secretary.

The Secretary read the notice convening the meeting.

The minutes of last meeting were read and confirmed.

* P. 70.

Correspondence.

The following letters were read:

A letter from Mr. J. Lawson, of Manchester, regretting his inability to attend the meeting of Council.

A circular from Mr. Black, of Regent Street, containing a list of subscribers, and stating that a portrait of Dr. Alfred S. Taylor, F.R.S., would be published for private circulation, and that India proofs with autographs would be issued at 15s. each; and wishing to be informed if any member of the profession would become subscribers.

It was moved by *Mr. Broad*, seconded by *Mr. Field*, and resolved, "That the Council purchase a portrait of Dr. Taylor with the necessary furniture."

A letter from Professor Walley, Edinburgh Veterinary College, acknowledging receipt of Mr. Lewis's certificate and regretting his inability to attend the meeting.

The following letter from Messrs. Wilkinson and Son:

"44, Lincoln's Inn Fields;
"*July* 17*th*, 1875.

"Sir,—We are now aware that the derogatory remarks were not made at the meetings of Council, and we are obliged to you for saying so; but they were made by members of your Council who could only have known of us, and of our conduct, as members of Council, and we were called on by His Royal Highness the Duke of Cambridge to exculpate ourselves and Professor Simonds from a distinct charge of fraud.

"This is not a slight matter after our long connection with you, and we think we are entitled to ask you to inquire, of those gentlemen who made the representations to the Duke as your agents and on your behalf, on what grounds they so made them.

"(Signed) Wilkinson & Son.

"W. H. Coates, Esq., Secretary,
"Royal College of Veterinary Surgeons."

The Secretary was instructed to reply to Messrs. Wilkinson to the effect that no members of the Council, as agents of, or deputed by, the Council, waited on His Royal Highness the Duke of Cambridge with reference to the Charter obtained by the Royal Veterinary College.

A letter dated 17th August, 1875, from Mr. R. H. Dyer, Limerick, calling the attention of the Council to certain members of the profession appending the words London and

Edinburgh to the initials of M.R.C.V.S., thus representing that they had a double qualification. He also called attention to the fact that the brother of the late Mr. Hugh O'Conner, M.R.C.V.S., of Limerick, was now assuming the title of his deceased brother and was practising under his diploma.

A letter from Mr. W. G. Dixon, of Southport, requesting information as to the obtaining of The Highland and Agricultural Society's certificate, to which the Secretary replied in due course with the necessary information.

A letter dated 24th July from Dr. Dunsmure was read, with a report of the "First Examinations" held in Edinburgh and Glasgow on July 20th and following days, from which it appeared that from the New Edinburgh Veterinary College eight passed and four were rejected; from the Edinburgh Veterinary College seven passed and two were rejected; and from the Glasgow Veterinary College twelve passed and three were rejected.

A letter from Mr. G. Turner, M.R.C.S., Landport, dated 30th August, wishing to be informed if a qualified medical man could present himself for examination if he could show that he had been studying under a veterinary surgeon.

The Secretary was instructed to reply that all candidates for the diploma of the Royal College of Veterinary Surgeons were required to produce a certificate of their having been duly educated at one of the recognised veterinary schools.

Letter from Prof. Walley, Edinburgh, wishing to be informed whether a Canadian M.D. would have to go through the whole course of professional study in order to qualify himself as a M.R.C.V.S.

The Secretary was instructed to write in reply that a Canadian M.D. could not be admitted except upon the usual terms.

Prof. Walley also wrote, asking whether there would be an examination in Scotland at Christmas; to which the Secretary was instructed to reply that there would be an examination in December, provided there was the requisite number of candidates.

The *Secretary* read the following report of the Committee appointed to inquire into the excessive cost of the Scotch examinations:

A meeting of the Committee, held July 28th, appointed by the Council to take into consideration the excessive cost of the Scotch examinations, and the advisability of two examinations being held in each year instead of three.

Present—Messrs. Broad, Cox, Harpley, and the Secretary.

The Committee have to report that they took into consideration the subject of the excessive cost of the examinations of Scotland, to which reference was made at the late meetings in Council.

From an investigation of the accounts and the reports rendered from Scotland, the Committee find the excessive cost is occasioned by the small number of students which had been allowed to come up for examination instead of the full complement of nine. In order to equalise the examinations, and reduce the expenditure, the Committee recommend that any odd number of students coming up for examination from each school be added together at the several meetings of the Board of Examiners either in Edinburgh or Glasgow, and that the railway fare of such students be allowed them.

Also, in order to meet the question, the Committee suggest, as the best means of remedy, that under no circumstance shall a Board of Examiners be called for the examination of a less number than six candidates; at the same time they recommend the co-operation of the principals of all the schools to endeavour to furnish nine candidates for each examination.

The Committee having placed themselves in communication with the principals of the respective schools in London, Edinburgh, and Glasgow, letters were received from Profs. Williams, Walley, and McCall, who were unanimous that there should only be two examinations. No communication was received from the principal of the London school.

The Committee, therefore, recommend that there should be but two examinations in the year.

The Committee also had their attention directed by one of the principals of the Scotch schools as to the desirability of the Scotch colleges commencing their opening session on October 1st, instead of November as heretofore, which the Committee highly approve.

The correspondence on the subject from Profs. Walley, Williams, and McCall was read.

The *President* moved, "That the report be received."

Mr. Fleming seconded the motion, which was agreed to.

Mr. Mayer moved the adoption of the report subject to the words "railway fare" being substituted for "travelling expenses."

Mr. Dray seconded the motion, which was carried unanimously.

The obituary notice was read.

Finance.

The report of the Finance Committee, together with the Treasurer's quarterly account and balance-sheet, was read, from which it appeared that the present liabilities amounted to £143 14s. 8½d., which the Committee recommended should be discharged. The above sum included the Parliamentary Agent's account.

Mr. Dray moved, and *Mr. Gowing* seconded, "That the report be received and adopted."

The motion was carried.

Cheques were ordered to be drawn for the current expenses.

College Fund.

The Committee reported that the balance at the Bankers' was £104 14s. 7d., which they recommended should be added to the sum already invested in the Three per Cent. Consols. There were also several promised subscriptions, which the Committee recommended should be applied for.

Mr. Mayers proposed, "That in one or more of the public journals the subscription list should be published with a short paragraph appended to the statement already issued by the Council, and that a sum not exceeding £15 be paid for three insertions, the expenses of advertising to be paid out of the fund."

Mr. Fleming seconded the motion, which was carried.

Charge of Cruelty.

A letter was read from Mr. Fleming, enclosing an extract from *The Derby Advertiser*, which stated that a member of the veterinary profession, named Keay, had been convicted no fewer than twenty-three times for cruelty to animals, and that on the last two occasions he was sentenced to three months' imprisonment with hard labour.

A conversation ensued as to what steps the Council should take, when it was discovered that the Council, under the bye-laws, had no power in the matter.

Mr. Fleming gave notice that he would move an alteration in the bye-laws to meet the case.

A letter from Mr. Rowe, enclosing advertisement from a Mr. Rotherham, who styled himself R.V.C.S., and asking whether he was a duly qualified veterinary surgeon. The Secretary wrote in reply that there was no such name on the list of members.

A letter from Mr. Moore, junr., enclosing a paragraph from the *Shrewsbury Chronicle*, in which a Thomas C. Dobson, of Southport, styling himself Veterinary Surgeon, was convicted

by the borough magistrates and fined £5 and costs for an aggravated assault.

The Secretary stated that he wrote to the editor of the journal and informed him that the person in question was not a member of the Royal College of Veterinary Surgeons.

A letter was received from Mr. Bryan Coleman, of Chicago, asking for a copy of the register in order to ascertain whether Mr. P. R. Courtneay, of the same place, had properly styled himself a M.R.C.V.S.

The Secretary stated that a copy had been sent to Mr. Coleman as requested.

The Application for an Extended Charter.

The President brought forward the motion of which he had given notice in regard to the applying for an extended Charter on behalf of the Royal College of Veterinary Surgeons. In any new Charter he said he would disclaim any right to interfere with the privileges or rights of any of the schools; at the same time he thought that the Council did not adequately represent the profession, and he would, in the first place, like to see power taken in the Charter for the Council to be elected by voting papers, the same as occurred at Oxford, Cambridge, the London University, and otherinstitutions where the constituency was widely dispersed, and that each member pay something like 5s. a year for registration, and Secretary's and other expenses. The second point in which the Charter required emendation was power to grant a higher degree than mere membership. Last spring there was a Committee appointed to consider the question, but it came to nothing because there were great doubts whether, under the present Charter, they had power to confer the higher degree. He would also like the Council to have power to hold their meetings at London, Edinburgh, or any other place which they might appoint, as it was a grievance for members who lived at a great distance having to come to London. The better plan would be to have the meetings in alternate years in Edinburgh and London. He thought it also desirable, in order to ensure a standard of qualification for diploma, that there should be a Joint Board instead of a separate Local Board, with one or two members going from London to Edinburgh at each examination, and *vice versâ*. Under the existing Charter there was power to erase the names of unworthy members, but in the new Charter it would be desirable to state that power more distinctly. It would also be desirable to have some new regulations in regard to medical men studying for the veterinary profession. They

started with much of the knowledge that veterinary surgeons required to have, and instead of suspending the bye-law, as proposed some time ago, there should be power given to admit them after half a term of study, or something of that sort. The present Charter prohibited professors from being examiners; it might be desirable that this prohibition should be removed. If the Council were to decide upon seeking for a new Charter, it might be as well to endeavour to get power to prevent unqualified men styling themselves "Veterinary Surgeons," but he very much doubted whether it would be possible to get such power. He thought it might be desirable to appoint a Committee to consider the details of the question, but at present he would move that it was desirable to apply for an extended Charter.

Mr. Fleming seconded the motion. The power, he said, to grant higher degrees in veterinary medicine was, by the present Charter, entirely shut out from the Council, and that fact alone would be a very strong point in favour of having the Charter revised, because he contended that, as matters stood, a person who became a member of the Royal College of Veterinary Surgeons had nothing to look forward to after receiving his diploma. He therefore thought that they, as the University of the profession, should have power to grant a higher degree than that which pertained to the degree of membership. If they could get a Charter enabling them five years after a young man had obtained his first degree to examine him again as to his qualifications, he was perfectly sure a large number of young men would work hard to obtain a higher degree, and this would at once give them a much more creditable rank in the profession, and in the estimation of the public, than they held with the present degree.

Mr. Mayer thought that a Committee should be appointed to investigate the matter, and report thereon to the Council, and that a meeting should subsequently be held of the veterinary profession, and a free expression of opinion invited as to the course to be pursued.

The motion "That it was desirable to apply for a extended Charter" was then put and carried.

The President then moved, "That a Committee be appointed to take the matter into consideration and report."

Mr. Dray seconded the motion, and moved, "That the following gentlemen be appointed as members of the Committee, viz:—Messrs. Fleming, J. C. Broad, Field, junr., Harpley, and Cox."

Mr. Balls seconded.

The motions were then put and carried unanimously.

The President announced the termination of the Quarterly Meeting of the Council, the meeting was then made special for the purpose of making an alteration in Bye-laws 26 and 31.

Special Meeting.

The President explained that Bye-law 26 provided that "three examinations shall be held in each year, namely, April, July, and December; and that it was resolved at the last meeting, and now needed confirmation, to substitute "that two examinations shall be held in each year, namely, July and December." He moved accordingly.

Professor Simonds referred to the examinations that were held at the Royal Veterinary College, and cited instances to show that such an alteration as was proposed would be impracticable and would run into direct collision with the Royal Veterinary College, which was now a corporate body and had the power of making its own bye-laws. It had made them, and by them it undertook that the student should be subjected to a first examination at the close of one winter and one summer session, and to a second examination at the close of the second winter session. It was not prepared to alter its bye-laws; and if such an attempt as was proposed by the Council were made, it would create a collision directly, an occurrence which was most undesirable. It was doubtful whether the Council had any power whatever in the matter. It was a question really belonging to the schools themselves, being more of an educational question than one relating to the examinations. He thought that the object of the Council would be entirely defeated if the second summer session were attempted. It was a matter that required a good deal of consideration, and he suggested that they should take counsel with the Royal Veterinary College on the subject, by means of a conference or otherwise, in order that some practical plan might be agreed upon, and that an extended period of time for education might be adopted. If any such conference between the two bodies were held, they should bear in mind that, as they could not accomplish their object by a mere summer session, they should have their students examined for their second examination, not at the end of the second summer session, but absolutely at the succeeding Christmas. Some such plan was worthy, he thought, of consideration.

Mr. Mayer.—Do I understand Professor Simonds to say that after the first examination in July he would propose the pupils should remain until the second Christmas after?

Professor Simonds said he would propose such a change, but he would not be unwilling to amend the bye-laws so as to drop the term winter session and summer session altogether, and say that at end of so many terms the student should be eligible for his first examination or eligible for his second examination. It was necessary to have three examinations in the year, and he would be sorry to see the law in that respect altered. He would concede the point that a student should be told at the time he was rejected that he would not be examined for so many terms afterwards; but if a student were rejected on some slight matter, as some of their best men were, he, the student, should have a chance of coming up at the end of the next three months as he had now; and if that were so, it was necessary to keep to the three examinations.

Mr. Fleming said it was a matter of very deep importance to the Royal College of Veterinary Surgeons, as a body responsible for the qualifications of the veterinary surgeon. Indeed it must be obvious at the very first glance that it was utterly absurd to attempt to make a young man a veterinary surgeon after twelve months' attendance at a veterinary school. Many of the young men were utterly incompetent to go into practice solely from want of college education. He was quite sure, when the Governors of the Royal Veterinary College understood this, that they would at once consent to the period being extended. The consent of three of the schools had already been given to an alteration of the examinations. There was not the slightest doubt that the alteration could be effected with the greatest harmony. It would be a great saving to the College and simplify the teaching of the schools.

The President said that for the sake of unity and concord he would drop the first part of his motion; and move only the alteration of Bye-law 31, regarding the period of study required from students before final examination. The other question, namely, the third examination, which the Scotch schools objected to, they could settle for themselves by not sending up their students for examination.

Prof. Simonds said he would enter his protest against the alteration, because it would bring the Council into collision with the schools.

After some conversation, it was ultimately moved as an amendment by Prof. Simonds, "That the discussion be postponed until the next meeting of the Council."

Mr. Dray seconded the motion, which was carried, and the Council adjourned.

ARMS OF THE ROYAL VETERINARY COLLEGE.

We have much pleasure in complying with the wish of very many Members of the profession, former students of the Royal Veterinary College, that we should insert an engraving of the arms of the College in the *Veterinarian*.

The engraving on the following page has been taken from the official seal of the College; the heraldic description of which is thus described:

Arms.—On a fesse, Gules, an Imperial crown between two anchors, Or. In chief, Or and Argent, on a band, Azure, an arrow entwined by a serpent, Or, between a poppy-head, Proper, in dexter, and a ram's head erased, Sable, holding a trefoil in the mouth, erect, in sinister. In base Or and Argent; on a Pale, Azure, a hand holding a broken dart, Argent, between a greyhound's head erased, Sable, collared, Or, in dexter, and an aloe, Proper, in sinister.

Crest.—A demi-horse, Argent.

Supporters.—Dexter a horse Argent, and sinister a bull Proper.

Motto.—*Venienti occurrite morbo.*

The motto is from the writings of Persius. It recognises the prevention of disease. Translated and read with its context, it may be thus rendered:—"Meet the coming disease."

THE IMPORTATION OF FOREIGN CATTLE.

At the Mansion House, October 21st, Mr. George Irwin, of the firm of George Russell and Company, of 151, Fenchurch Street, steamship brokers, appeared before Alderman Sir Robert Carden on an information and complaint, alleging that on the 8th of August last they had committed an offence against an Order in Council, made in pursuance of the Contagious Diseases (Animals) Act, 1869, in removing, without the authority of the Privy Council, from lairs adjacent to the place of landing at Thames Haven, certain animals landed from the steamship Strauss, and detained on a certificate that the regulations in such order had not been observed in the same steamship.

Mr. Poland, barrister, instructed by Messrs. Wontner, solicitors, explained to the Bench, in effect, that this was a prosecu-

ROYAL VETERINARY COLLEGE FOUNDED 1791
VENIENTI OCCURRITE MORBO
INCORPORATED 1875

tion by the Treasury authorities, in a matter regarded of some importance, inasmuch as at present the question of the importation of foreign cattle had become one of the most prominent topics of the day. In the Order in Council certain countries were scheduled, and cattle from such countries must be landed in a defined part of a port for immediate slaughter. The countries were scheduled from the fact of the disease existing or having been existent there. The defined part of the port of London was Deptford, where the foreign cattle market was situated. One of the scheduled countries was Prussia. Schleswig-Holstein formerly belonged to Denmark, but now belonged to Prussia; but Schleswig-Holstein, never having been an infected country, was excluded from the scheduled countries, and enjoyed all the privileges of an unscheduled country, subject to certain restrictions set out in the Order in Council, and cattle could be landed and moved to the London market upon the certificate of an inspector that they were healthy, and that the order had in all respects been complied with. But it was part of the order that the vessel in which the cattle were imported should not have carried, within three months, cattle from a scheduled country; and the sanction of the Lords of the Privy Council was required before a vessel could be employed in the trade. It was also directed that places on board ships used for animals should be divided into pens by substantial compartments, and that if some or one of the regulations had not been complied with in a vessel, the animals landed from it should, on a certificate of an Inspector of the Privy Council, be detained at the place of landing, or in lairs adjoining to it, until the Council directed what should be done with them. It was also directed by other articles that foreign cattle should not be landed except at the ports mentioned in the order, one of which is London, and that the cattle should be placed in a lair and examined by an Inspector of the Privy Council, and detained twelve hours before leaving the place. From that it would be seen that Schleswig-Holstein was an unscheduled country, and subject to certain restrictions would send cattle to this country, where they would be received, if the ship in which they were sent had been properly certified by the Privy Council as being properly constructed in accordance with the requirements of the Order in Council; and that, having been landed, as required by the order, examined by the inspector, found to be healthy, and having been detained twelve hours, might then, upon the certificate of an inspector, be moved up to the Metropolitan Cattle Market for sale, instead of being like cattle from the scheduled countries, which are taken direct to the Foreign Cattle Market, and there slaughtered. The defendant, Mr. Irwin, was a member of the firm of Russell and Co., who are the agents to Messrs Honck, a firm of

cattle owners at Tonning, a port in Schleswig-Holstein. The Messrs. Russell are the owners of two steamships, the City of London and the Tonning, cattle vessels duly certified by the Veterinary Department of the Privy Council. About this time of year cattle food is somewhat scarce, and in consequence, about the beginning of last month, Messrs. Honck had more beasts to deliver than they had certified vessels to carry, upon which they hired a steamship called the Strauss, and put on board that vessel 279 head of cattle and 175 sheep, communicating, at the same time, to Messrs. Russell the fact that the Strauss was coming over with that cargo, and asking them to obtain the special permission of the Privy Council for the landing of the animals at Thames Haven. The defendant, Mr. Irwin, saw Dr. Williams, the Secretary of the Veterinary Department, and asked for the desired permission, the firm of Russell and Co. being well known to that department as one of the largest importers of foreign cattle in this country. The permission was at first refused, but upon Mr. Irwin's assurance that the Strauss was fitted in every possible way to carry cattle, and in accordance with the regulations, permission was given to land the animals at Thames Haven, subject to the observance of certain conditions required by the "Animals Order" of 1875.

On the arrival of the vessel an inspector superintended the landing of the cattle, and, while that was being done, saw that thirty or forty beasts in the forehold had no divisions at all, and were all huddled together. This being contrary to regulations, he called the captain's attention to it. He found also that the other animals were crowded on deck, where there was most insufficient accommodation for them, and that generally the state of the vessel as to cleanliness was anything but what could be desired. He thereupon detained the animals, pending the decision of the Privy Council, in the lairs belonging to the Thames Haven Company, of which the defendant was a director.

Eventually—and this was the gravamen of the present complaint—the defendant, at his own risk, and contrary to the remonstrance of the constituted authorities, had the animals put on board a steamer and taken to Deptford. The defendant, when before the Court yesterday, pleaded guilty, and that being so, Mr. Poland, addressing the Bench, submitted that the case was not one for the infliction of a mere nominal penalty.

Mr. Lanyon, who appeared as counsel for the defendant, said his client was the last man in the world to act contrary to the rules of the Privy Council. After the arrival of the vessel at Thames Haven the Privy Council eventually gave him leave to land the cattle in question. The animals were quite healthy at that time; but for some minor reasons they were ordered to be

detained by the inspectors—the very worst course that could have been adopted under the circumstances. Mr. Irwin was, therefore, opposed to such a course, and in that respect thought he was doing no harm to any one except himself. He did not now wish to contest the matter with the constituted authorities, with whom he had always been on good terms, and as his counsel, Mr. Lanyon submitted there was no intention on his part to act contrary to the spirit of the law, though he had broken the letter. The ship in question had been in the cattle trade for a considerable time, and on this occasion he had been rapidly engaged to bring cattle over to Thames Haven. The vessel had belonged to the North German Lloyd's Association, and he had every reason to believe that all the orders of the Privy Council had been observed.

Sir Robert Carden said it was clear the defendant had committed an offence against the Act, and he had really incurred penalties amounting to, in all, £2270, according to the strict letter of the statute, when they were all added up; but probably he had now seen his error, and would not again contravene the provisions of the Act. Sir Robert thought, under the circumstances, that a fine of £20 and ten guineas costs would meet the justice of the case on both sides.

The defendant paid the money and left the court.

Veterinary Jurisprudence.

IMPORTANT HORSE CASE.

THE ARGYLE AND BUTE LUNACY BOARD
v.
HUGH CRAWFORD, BURNTSHIELDS, KILBARCHAN.

(*From the 'Paisley and Renfrewshire Gazette,' Oct. 9th,* 1875.)

WE noticed in our paper of Saturday last that an appeal in this case came before Sheriff Fraser on Monday, 27th September. We are now enabled to give the remarks, in an abridged form, of defender's counsel and pursuer's procurator in the case.

Mr. David Brand, advocate, Edinburgh, instructed by Mr. William Reid, writer, Johnstone, said he appeared on behalf of the appellant, Mr. Hugh Crawford, who complains against the judgment pronounced by Sheriff-Substitute Cowan in the action between the Argyle and Bute Lunacy Board and Hugh Crawford. The conclusion of the summons is to obtain repayment of the sum of ninety pounds sterling, which is the price of a mare alleged to have been sold on 10th February, 1875. The grounds of the

action are that the mare was warranted to be sound, and has turned out to be unsound. The finding of the Sheriff-Substitute upon the matter is this: "Finds that at the date of sale the said mare was unsound from bog-spavin." Now, your Lordship will observe that the whole question to be determined is, whether or not at the time this sale was made the said mare was suffering from bog-spavin. The action was raised in the month of April, and the mare was in the possession of pursuers without any complaint from the 10th till the 26th February. It was only on that latter date that they discovered this physical condition of the mare. She was afterwards at an inn in livery, and thereafter sold. The pursuers undertook to prove that this mare was not according to warranty, and that she was suffering from a physical disease, which was bog-spavin—that is a disease which depends upon the inflammation of the hock joint, and the symptoms of which are swelling, tenseness, pain to the touch, and lameness more or less. But it is necessary to couple with that statement this observation, that there may be, and there is frequently (especially in the breed of Clydesdale mares), distension of the joint, or fulness of formation of the joint, without there being bog-spavin or disease of any kind. Your Lordship will be satisfied on the evidence that there was here a certain peculiar formation of the hock joint. Another thing is, that when bog-spavin once arises it never disappears. It may be modified by skilful treatment, but traces of the disease are always recognisable by a skilful veterinary surgeon in an animal which is suffering from it. I now come to this point, and that is, in this case we are able to trace the whole history of the mare, and that very minutely, from the time it was bred or foaled until it was sold on this particular occasion. The mare was bred by a man named Lyle, at Torr, who says she was a good worker, and never showed any signs of lameness in her hind legs. Lyle sold the mare to the defender in June, 1874, as a sound mare and a good worker, at the price of £68. After that she was sold by the defender, with a warranty, to Mr. Samuel Clark at a slight rising price, viz. £70. The statement of that will be found at page 41 of the proof where the defender says, "I sold her at Kilbirnie fair with warranty to Samuel Clark, Manswraes, for the price of £70. While she was with him she was grazed, and was served, and I purchased her back in the end of August for £78. At Balloch fair on the 15th September, 1874, I sold her to John Williamson for £80, guaranteeing her to be sound and a good worker. In January, 1875, I repurchased from him, through Alexander M'Lachlan, along with another mare, at the slump price of £120; £35 of this was for the one mare, and the £85 for the mare in question. He warranted her to me, but not the other one which was lame. On 3rd February, 1875, I sold her with warranty at the price of £86 to Principal M'Call of Glasgow, who said he was acting for the Local Authority of Glasgow, and who holds an appointment as medical officer for them, under the Contagious

Diseases (Animals) Acts." There, up to time of the sale to Principal M'Call, we have the entire history of this horse. She thus passes through the hands of Lyle, the defender, Clark, and Williamson, and then she comes into the hands of Professor M'Call, who is Principal of the Veterinary College in Glasgow. He was satisfied that she was sound, and bought her from the defender for the local authority of Glasgow, to be used as a draft horse. The price at which she was sold was £86, with a warranty. He kept her only for a few days and then returned her to the defender, not because she was unsound from any disease, but because she was timid and uneasy at the smell of the blood and other things in the slaughter-house—a circumstance which is not uncommon. There are few horses to be got suitable for this purpose. It is difficult to get them. The defender then sent another animal to Mr. M'Call, who was capable of doing the work, and the mare remains in the hands of the defender from the 6th to the 10th of February, when Mr. Crole, acting on behalf of the Lunacy Board, having been put in connection with defender through Mr. Leslie, a commission agent (called as a witness) the transaction and purchase took place, and the defender sells the mare to Mr. Crole, with written warranty, at the price of £90. Now, Lyle, Williamson, Clark, Crawford, and M'Lachlan, all distinctly state that the animal was a perfectly sound animal, and that there was no bog-spavin about her, and Clark is a farmer, seventy-six years of age, and has been forty-nine years in the horse trade. He says—"I have often seen bog-spavin. I saw no bog-spavin about this mare. Had she been affected by it I would have noticed it. There was no bogspavin about her." Principal M'Call says,—"On 3rd February last I purchased the mare from the defender with a warranty at the price of £86, for the Local Authority of Glasgow, under the Contagious Diseases (Animals) Acts. I examined the mare at that time and found her sound. I found her unsuitable for the work I had to do, as she was timid in the slaughter-house from the smell of blood, so I returned her to the defender, with whom I arranged to purchase a different animal. I did not return the mare because of any unsoundness." Williamson fully explains why he parted with her. He says he parted with the mare because he thought she was with foal, which was not the case. That statement by Williamson is distinctly corroborated by Clark, so that he had good reason for thinking she was with foal. M'Call's reason for parting with her was her disliking the smell of blood in the slaughter-house, and this is fully corroborated by the witness Brown, who acted as vanman to the Local Authority of Glasgow. I put it to the Court that the reason why Williamson and M'Call parted with this mare was not in respect of any unsoundness; the one reason was because she was supposed to be pregnant, and she was not, and the other was that she was found unsuited for the very peculiar and exceptional work for which she had been

purchased, and this is not contradicted by any witness led on behalf of the pursuers.

[*In continuation of the subject, the 'Paisley and Renfrewshire Gazette,' of October 16th, observes.*]

Regarding the above case, we stated in our last that Mr. David Brand, advocate, Edinburgh, instructed by Mr. William Reid, writer, Johnstone, appeared on behalf of the appellant, Mr. Hugh Crawford, who complains against judgment pronounced by Sheriff-Substitute Cowan in the action between the Argyle and Bute Lunacy Board and Hugh Crawford. The conclusion of the summons is to obtain repayment of the sum of ninety pounds sterling, which is the price of a mare alleged to have been sold on 10th February, 1875.

Mr. Bland, in continuing his address as reported last week, said—In addition to that evidence, we have three independent gentlemen; I refer to the witnesses Mr. Barr, Mr. M'Murray, and Mr. Edmond William Hardie, and they are perfectly neutral witnesses, who speak to the soundness of the mare. M'Murray, a blacksmith, who was shoeing her, could hardly have failed to have noticed any lameness. Mr. Hardie, who has considerable experience of horses, and has acted as a judge of horses at several agricultural shows, saw the mare while in possession of Lyle, Clark, and at the Balloch Fair when sold to Williamson, and also on the 3rd July last, after she had been judicially sold, and on all these occasions he did not observe lameness nor bog-spavin. He says, "On Saturday, 3rd July, I examined the mare particularly. I saw no swelling about her hocks. I pressed them, and there was no pain. No bog-spavin, nor any trace of it." This witness seems to have considered himself a judge of horses. The next point is this, and I ask your Lordship's attention shortly to the circumstances upon the day of the sale. We have these from the evidence of M'Lachlan and Crole himself. M'Lachlan says—"I was present when the mare was sold to the pursuers' manager. She was trotted out and walked. I said at the time to him that she was right every way, only she walked a little wide at the hocks. She was, in my opinion, quite sound at the date of sale to the pursuers' manager." Crole, when examined upon the circumstances of the sale, says—"I examined the mare, particularly the *fore-feet*, and, being satisfied with her general appearance, I said to defender that I thought she would suit if she was sound. I was not a judge of horses myself. The defender said that he would give me a warranty, and I then received from him the warranty number twenty of process, which also embodies a receipt for the money which I then paid." From Mr. Crole's situation, he must buy and sell horses and cattle to a considerable extent, therefore I cannot take his statement that he was not a judge of horses. He acted as a judge of the horse on the occasion. He trotted it out and walked it, at the same time forming his opinion whether it suited him; he asked the warranty and got it. There

is also this to be said about his evidence; he leaves us to infer that he did not examine the hind legs. He says—"*I examined the mare, particularly her fore-feet.*" But he must have been called upon to look to the *hind legs*, for we have the evidence of Mr. M'Lachlan, who says—"*I said at the time to him that she was right every way, only she walked a little wide at the hocks.*" Now, Mr. M'Lachlan must have called his attention to the peculiarity of the hind legs, although Mr. Crole in his evidence rather insinuates that he did not pay any attention to that part of the animal. We have also this fact at a subsequent time, 10th March. According to Mr. Crole the defender agreed unconditionally to take back the mare, the only understanding being that the mare was to be kept till Lochgilphead market. The story, however, of the defender is different. He says that the mare was to be returned if Professor M'Call, who examined her, certified that she was unsound. If he certified that she was sound, he was to keep the mare. There is some difference between the version of the defender and that of Mr. Crole. While Crole is not corroborated in his statement, the defender is corroborated by one of the pursuer's own witnesses, Thomas Leslie, and he states that Professor M'Call's name was referred to. Crole's desire is to have it understood that this mare was to be unconditionally returned, but from Leslie's statement the bargain seems to have been that the defender was only to take back the mare if she was found to be unsound upon the report of Professor M'Call. Crole's statement is that the mare was to be returned under any condition; only it was to be kept for nine days. I don't know that the evidence of Mr. Crole is quite so absolutely reliable as the pursuers would have it to be. At all events it seems to be this mare—this real sound mare—left the hands of the defender on 10th February, without being subject to any disease of any kind. She had this peculiarity in the hind legs (which I will mention afterwards). She remains in the hands of the pursuers or of Mr. Crole, from the 10th till the 26th February. They complain of the mare, and it is now necessary to revert to the history of the animal in that interval to the discovery said to have been made on the 26th. According to the evidence of Duncan Smith, "the mare was taken out and worked every day." So he says on page 29. Then he says—"She was put to the plough, but at first only for half a day, and she ploughed every day." He alters that on page 30, and explains "that now and again, previous to 26th February, the mare did not work at all, even for half a day." Which of these is correct I don't know. At all events, she worked half a day frequently, because we have M'Millan on page 75, and he is an important witness, being in the pursuers' employment at the time, saying that the mare was put to work on a field belonging to pursuers a few days after she was delivered to them by the defender. He says—"Sometimes she was worked a half day and sometimes a whole day prior to the ploughing match on 26th February. I think that very frequently, or at all events nearly every day, she was put to work.

She never worked less than half a day, and on some occasions a whole day." There is no complaint of bog-spavin, and no discovery during that fortnight, or rather these sixteen days, from 10th to 26th February. On the 26th she is engaged in a ploughing match, and the case for the pursuer here begins, and is this—"*that she was discovered to be lame two hours after the match began.*" This mare is discovered to be lame, and the evidence that has been brought forward is very unsatisfactory. It seems to rest entirely upon *three* witnesses—Crole, Smith, his man, and Leslie, the commission agent. Crole's story of the condition of the mare on the 26th of February is this—that she was then "*first* taken out for a *whole day's work.*" That we know to be untrue, because M'Millan tells us a different story. "She was in charge of Duncan Smith, my ploughman, who is a man of experience. About an hour after she started I observed that the mare was very fidgety, and I watched her very closely. I then observed that she was going lame, apparently in both hind legs. This was about two hours after her starting. I examined her, and found a swelling upon both legs, especially the right or off leg. I allowed her to go on with the match. I cannot say that the swelling was increased at the close of the day's work. There was a large attendance of farmers that day, and I did not wish to take my mare away from the competition when she had been entered for it. It would have attracted considerable attention if I had, and caused comment." This is corroborated by the ploughman, Duncan Smith, and by Leslie, the commission agent, the latter saying that "my attention was particularly called to the mare on the afternoon, about two or three o'clock, by Mr. Hinselwood, a gentleman who was along with me at the match, who said that the mare was lame." I may just remark that this gentleman (Mr. Hinselwood) has not been called as a witness by the pursuers. Crole intimated the matter of the mare being lame to the defender by letter on 1st March. That is the whole evidence as to the condition of the mare on the 26th of February. I may say it is inconsistent with the previous history of the mare. The evidence is not such as one would have expected as to its condition upon that day; and I say this without making any aspersion upon either Crole or Smith; they are more or less biassed in this case. The only neutral testimony—if it can be called such—we have is that of Leslie. He figures in the original introduction of Mr. Crole to the defender, and he figured also at the ploughing match. Now, what do others say? for there were the judges of the match, there were servants there, and there were spectators. What do they say? because they had the same opportunity of seeing the animal as these three people had, and I may just remark that not one of them has been called by the pursuers, while all of them, so far as practicable, have been called as witnesses for the defender. These say that the horse was not lame, so far as they saw, and there was nothing the matter with the horse. Referring to that body of the evidence, we have

Baillie, a neighbouring farmer to pursuers; he says—"I saw it several times during the day from one o'clock onwards. It was going well, and showed no lameness." In his cross-examination he says—"I think I could not have failed to observe lameness if it really existed." I know that those on the opposite side will say, in reply, that he was not inspecting the mare; but whether or not, it was almost impossible, he being a farmer, that he could not have seen it, especially going up an incline. The next witness I will call is Mr. Dickson, who was a judge at the match. He says—"My attention was called specially to her, as she was spoken about at the time, being a new mare, and thought highly of by the pursuers' manager. I passed and repassed her several times during the day, down to the close of the match. I did not notice any lameness about her hind legs, no swelling, not the smallest. If the mare had been going lame I would have noticed it. My impression was that Duncan Smith was holding her in too much that day. This would make her uneasy if she was a fractious animal. I subsequently saw a mare at Ardrishaig Inn, and, on inquiry, I was told that it was the mare from the asylum, and that she was sent down to livery, as being disputed. I saw her every day from a few days after the 19th March until she was taken to Glasgow. I saw no signs of lameness about that mare, nor any swelling upon either hock. It was the same mare that I saw at the match."

Sheriff Fraser.—That seems very strong evidence. What is he, this man?

Mr. Brand.—He was at the match as judge. His attention was specially called to the animal.

Sheriff Fraser.—The mare was sold afterwards?

Mr. Brand.—Yes, my lord, judicially, and was bought by the defender. After he kept her for some time, she was re-sold by the defender at Ayr for the price of £85, with warranty. But this is rather anticipating.

Sheriff Fraser.—What did she bring at the sale under the warrant of the Sheriff?

Mr. Brand.—£73, my lord. She was first sold at £68, and she rose in price until she was sold for £90. When sold judicially she brought £73, and we know that that is sometimes not the best way to sell. Your Lordship has the evidence of the other two jndges at the ploughing match, viz.—M'Kechnie and Richmond—both of whom say they saw no lameness about the mare; also Holmes, M'Farlane, M'Millan, and John Crawford, all of whom were at the match, and saw no lameness about the mare, and who state that if the mare had been lame they would have observed it. The mare is kept for some time after the match, and she is afterwards put into the stables at Ardrishaig Inn. Then the pursuers set about getting evidence in support of the condition of the hind legs of the mare, and certificates are received from the veterinary surgeons, Robinson, Williams, Mitchell, and M'Lean. The most important of these is Professor

Williams, of Edinburgh. His evidence, however, as well as his written certificate, are open to considerable animadversion. In his written certificate he does not say that the mare was suffering from bog-spavin. Therefore the terms of the certificate suggest to us that he did not think the animal was suffering from bog-spavin, and he would not go the length of saying that in his certificate. He does not mention bog-spavin. He hesitates to give an opinion, and apparently he ventures in the witness-box to say that it was bog-spavin. However, he will not say that the disease in that animal existed at the time of the sale. His examination is open to this remark, that it was insufficient. He says he occupied three or four minutes in examining this mare. He went to Ardrishaig, and between the arrival and departure bells of the steamer he examined this mare. I say that that was an insufficient examination in a matter which had become something serious. I think it is impossible to take Mr. Williams' evidence, that the mare may have been affected with bog-spavin on the 10th February, and yet had no trace of that disease till the 26th February. The evidence of Principal Walley, M'Call, Professor Fordie, and Gray, contradicts such a theory. Another remark I will make, and that is, if this animal had bog-spavin at any time why was it not treated for that disease? It is curious that from the beginning to end of this action down to the present moment, this mare has never been treated for this disease or any kindred disease. Robinson says that he cannot tell whether it existed on 10th February. He says that he formed the opinion that it was bog-spavin because there was swelling, but he says there was no lameness. M'Lean says, also agreeing with Robinson, and differing from Williams, that there was no lameness. That is an important matter. M'Lean says,—"I could not form any opinion as to the length of period the disease had existed." "When I saw her she was free from lameness." I rather think it must be accepted that there was no lameness. The only thing that Professor Williams can fall back upon is the distension of the hock joint, and you must come back upon the condition of the animal, and these two points are proved beyond all question. It is a curious thing when we trace the evidence of the witnesses, how they speak about distension, and found upon it as proving bog-spavin. The mare had this peculiarity; she walked wide behind, and there is a mass of evidence to speak to that fact. The second peculiarity here is that the mare had straight hocks. There is also distinct evidence of that fact. Professor Fordie says,—"The hock s were full-formed, but not swollen. I consider the formation of the hock to be quite natural, and not due to disease." He is corroborated in this by Principal M'Call, Walley, and Gray. We have thus these four scientific men who all say that she had a peculiar formation of the hock, and you have a mass of evidence as to her walking wide behind; still these peculiarities are never referred to by the pursuers' witnesses. The walking wide

behind would explain the lameness, and the formation of the hock would explain the swelling; or, to adopt the language of Professor Williams, "*the enlargement of the hock joint.*" Besides, what evidence have we that this mare was suffering from this disease at the date of sale? I say there is none. The whole of the pursuers' scientific evidence, including Professor Williams', only amounts to saying there was a possibility that it might have existed, but that they cannot say whether the mare was suffering from bog-spavin on 10th February. In short, they cannot say positively that the bog-spavin actually did exist at the date of sale. I now come to the conclusive affirmative evidence of the seven skilled witnesses brought forward by the defender, who speaks of the condition of the animal from 3rd February till the 2nd July, and all of whom say that it was perfectly sound. The most important one is Principal M'Call, not only because he is Principal of the Veterinary College of Glasgow, but because of his repeated opportunities of forming an opinion as to the condition of the mare. He saw this animal on the 3rd February, and he then formed the opinion that she was sound. After the dispute arose between the pursuers and the defender, he was called in by defender to give his opinion. He did not rely on what he had seen of the mare before, but went down to Lochgilphead for the purpose of examining her, and he made an inspection which lasted half an hour, forming the opinion which is embodied in the certificate granted by him, dated 17th March, 1875. We have thus his opinion formed on the 3rd February and 17th March, and I submit that it is quite conclusive on these dates. The Sheriff-Substitute has animadverted to Mr. M'Call's evidence. He appends a note to his interlocutor, in which he says —Mr. M'Call is a good deal mixed up with the case; and apparently founded upon that view of the matter, declines to attach much credence to his evidence. How is Mr. M'Call mixed up in the case? Is he not mixed up in a way that is satisfactorily and clearly explained? He buys the horse for the Local Authority of Glasgow, but finds that it is timid from the smell of blood in the slaughter-house, and in consequence returns it, not from any objection to its soundness, but because it was not suited for his work. He is called in—and very properly too—to give an opinion on the mare, and this is taken by the pursuers as a good objection against him. His bias would rather have been to the view that the mare was unsound. He goes and sees the horse at the defender's request, knowing at the same time that it was upon his opinion that the mare's return would depend. It is out of the question to think that Mr. M'Call's evidence is not to be taken at its full value when we have these explanations, which the evidence shows. Mr. M'Call is a man of high respectability, and there was no doubt, of high position in the veterinary world, and he was undoubtedly looked upon as one of the chief authorities in this matter in Glasgow and the West of Scotland. He is a man of great experience, and a considerable number of horses,

cattle, and sheep are continually passing through his hands. I undoubtedly claim him as being the most important skilled witness who has been called for the defender. The Sheriff-Substitute further suggests that Mr. M'Call is not quite a good witness to rely upon, because this mare, which was bought by the defender at the sale under warrant of the Sheriff, was kept by him at his farm afterwards between the 9th June and the 2nd July. But Mr. M'Call explains that the whole time she was in his possession after the judicial sale she was wrought at carting manure from Glasgow to his farm, along a very steep road; and the farm-servant Ferguson corroborates this. There was no treatment to find whether this animal was suffering from bog-spavin, despite all the evidence of the veterinary surgeons. The defender told Mr. M'Call to work her very hard, carting manure six miles from Glasgow to the farm. Now, that evidence is entirely uncontradicted. Why, therefore, the Sheriff-Substitute thinks that Mr. M'Call is a witness not to be relied on because of this is a very difficult thing to explain. I put it to your lordship that this mare could not have had bog-spavin when she exhibited no signs of it during these three or four weeks in June, at hard work. All the witnesses state that this disease of bog-spavin in incurable. Principal Walley, Professor Fordie, Gray, Allan, Mitchell, and Pottie, say that it is an incurable disease, and they all say that a veterinary surgeon would have no difficulty in tracing the disease whether it existed. In conclusion, your lordship has the fact that the mare was never treated for this disease, and no trace of the disease was found upon her up to the time she was sold to the defender. She was put to the severe test of carting up this steep road, and without exhibiting any signs of unsoundness. This action was raised on the 27th April, and shortly after that the mare was sold judicially for £73, and bought by the defender himself; he gave this price for the mare said to be unsound from bog-spavin. He kept her, and then sold her at Ayr fair at the price of £85, with warranty. Your lordship has the whole history of the mare before you up to the time of the sale, and I think I have been able to give you the remainder. I submit that there is no ground for the judgment pronounced by Sheriff-Substitute Cowan, and I ask you to recall that judgment and assoilzie the defender from the case, with expenses.

Mr. MacRobert said he appeared for the respondents in this case, the Argyll and Bute Lunacy Board against Crawford. He thought that his friend, Mr. Brand, had failed to discover from the proof the nature of this peculiar disease, or rather he had very skilfully manipulated the statements in the proof as to the disease, so as not show the exact nature of it. It is not a disease which is easily discovered by an unpractical man ; but the attention once being directed to the disease, a professional man at once discovers it, because it always exhibits swelling of the hock, and that swelling rises and falls according to the state of the animal

or according to the work it is put to. It is not easily observed by an unpractical eye when it is in a latent state; there is no swelling which may be apparent and no lameness—bog-spavin may exist without any lameness being discovered. This accounts for the fact that the disease was not noticed between the day of sale and the ploughing match; it may have existed from the very day of sale, it may have existed six months before or twelve months so far as any unpractical eye is concerned. The disease may become chronic, and is then not sensitive to the touch. Principal Williams especially lays that down, and one or two of the other witnesses speak to that fact.

Sheriff Fraser here asked Mr. MacRobert—What makes the lameness, then?

Mr. MacRobert answered—That, my lord, is not disclosed in the proof. Mr. MacRobert next referred to the remarks made on Mr. Crole, the pursuers' manager, and contended that he was a disinterested witness, and said it did not appear from the proof that he was well acquainted with horses, nor did he require to have a knowledge of horses for his position upon the farm. He submitted that the pursuers had proved that the mare was lame on the 26th February at the ploughing match, and that Crole, Leslie, and the ploughman Smith were three credible witnesses, and they swear that the mare was going lame at the match, and that on examination they found the hock swollen. Crole did not at this time attribute the lameness to bog-spavin; he did not know what it was, he found something wrong, and at once proceeded to get a veterinary surgeon, which he did. Mr. Mitchell saw it on the 8th of March, and gave a certificate of unsoundness from bog-spavin. Principal Williams is afterwards got to support this skilled witness, and then two other veterinary surgeons. The defender proved that this mare had changed hands eight times in eight months, and all the witnesses to whom she was sold say that they saw no disease about her. It is a very curious thing that they all parted with her as soon as possible, and that she is always bought back by the defender, except the last time, when she is taken back from Principal M'Call, and nobody knows whether or not any arrangement is made for the taking her back. In reference to scientific witnesses, generally speaking those for the pursuers speak to facts that they saw exhibited about this mare, while those for the defender only give their opinion, and that mere opinion, however good it may be, is not worthy to be set against facts. He thought the fact of the defender purchasing the mare at the judicial sale did not improve his position, and concluded by expressing his satisfaction that on a perusal of the evidence his lordship would have no difficulty in finding the pursuers have made out their case.

Mr. Brand replied. He said he could hardly accept the representations made by the other side as being correct. I asked my friend to give me his references to some parts of the evidence, and when I tried to put my finger upon them I could not see

them, and I think his references must be wrong. It seems to be admitted by the other side that there may be no lameness, and yet there may be bog-spavin, but in making that statement my friend forgets that it was upon the alleged existence of lameness he founds his opinion and whole case. As to the condition of the mare on 26th February, he asked his lordship's attention to the undoubted testimony of the six witnesses, with the evidence of John Crawford, who was in the service of the pursuers, and that Duncan Smith, also in the pursuers' service, and a ploughman for sixteen years, may fairly be taken as sufficient evidence of the condition of the mare between the 10th and 26th Feb. He states that he saw no lameness nor sign of bog-spavin about the mare. Counsel contended that there was a resolve on Mr. Crole's part to get quit of the mare before Mr. Mitchell or Mr. Williams came upon the scene. He had written the defender, and the defender's reply was in process, dated 1st March, while Mitchell's certificate is dated 8th March. The defender says he received a note about the mare not being sound. Therefore it is clear Crole had concluded the mare was unsound before she was examined by Mitchell. It is also in the evidence that the mare was "a keen drawer," and that Duncan Smith was holding her in too tight at the match, so that there is the possibility of the mare receiving a strain." There is nothing curious or uncommon about the mare changing hands so frequently. The horse dealer gets back the horse, and always pays an additional price—the animal rises in price from £68 to £90. She never goes down in price, and she is always warranted. From the time she was sold by Lyle, down to the sale to Principal M'Call, she is six times warranted. It is therefore out of the question to suggest that because the mare came back to the defender that there was some doubt about her. They kept the mare a very short time, they always sell it at an additional price, and they always make a few pounds by the transaction. We do not know that there is any arrangement made with Mr. M'Call and the defender to take the mare back. We do not know anything about arrangements. The statement he mentions is this, "I found her unsuitable for the work I had to do." He contended that the disease of bog-spavin is incurable, and it had been conclusively proved that, irrespective of treatment, traces of it can always be ascertainable by a skilled veterinary surgeon. Counsel, in conclusion, submitted that he was entitled to have the interlocutor recalled, and that the defender be assoilzied, with expenses.

Sheriff Fraser took the case to avizandum.

OPENING OF THE SESSION AT THE ROYAL VETERINARY COLLEGE.

In our last number we were enabled to give *in extenso* the address delivered by Professor Simonds, on October 1st, at the opening of the Winter Session at this Institution. We now insert the list of prizemen and students to whom the medals, certificates of merit, and of office-bearing were awarded.

The distribution was made by the Chairman, Sir Paul Hunter, Bart., who addressed a few appropriate remarks to the successful competitors, and subsequently spoke of the importance of the science of veterinary medicine, and the absolute necessity which existed for each student, in his turn, to make himself master of even the most simple details of the daily practice of his profession. In the shoeing of horses—although they were not there to be made shoeing-smiths—it behoved them to study the details as well as the principles of the art. Many a horse was ruined from the simple fact that his heels were not made perfectly level and of equal height by the smith before the shoe was attached to the foot. Even naturally bent limbs were often to be remedied by a simple expedient of this kind, while a want of the practical application of the principle each time the animal was shod tended to perpetuate the natural defect. The Honorable Baronet also spoke of the important position which the College held among the medical institutions of the country, and remarked that as it was now an Incorporated Institution by Royal Charter, the Governors had determined that it should stand second to none in Europe.

Col. Sir Frederick Fitzwygram, President of the Royal College of Veterinary Surgeons, also addressed the meeting, which he regarded as one of the most important ones in connection with veterinary science he had ever attended. He spoke of some of the difficulties which had arisen in the course of the progress of the Charter between the Royal Veterinary College and the Royal College of Veterinary Surgeons, arising from a misconception on the part of the Council, with which he was more immediately connected, as to what the Governors were endeavouring to effect. He expressed a hope that, as all difficulties were now removed, the two institutions would advance hand in hand to effect the further improvement of veterinary science. He regarded the standard of examinations for the diploma of the Royal College of Veterinary Surgeons as not being sufficiently high, and trusted that the day was near at hand when none but thoroughly educated students would be permitted to enter the ranks of the profession.

AWARDS.

Mr. John Henry Steele was awarded	The Coleman *Silver Medal.* Clinical Clerk *Certificate.* Monitor ditto. Prosector ditto.
Mr. George William Carter .	The Coleman *Bronze Medal.* Monitor *Certificate.* Prosector ditto.
Mr. George Burton . . .	The Coleman *First Certificate.*
Mr. James Fred. Oliver . .	The Coleman *Second* ditto. Clinical ditto. Monitor ditto. Prosector ditto.
Mr. Frank Taylor Oatway .	Assistant Inspector's Smithfield Club *Certificate,* 1874. Clinical *Certificate.* Monitor ditto. Prosector ditto.
Mr. William Ashby Hurrell .	Assistant Inspector's Smithfield Club *Certificate,* 1874. Clinical *Certificate.* Monitor ditto. Prosector ditto.
Mr. Chas. Gresswell . .	Assistant Inspector's Royal Agricultural Society *Certificate,* 1874. Clinical *Certificate.* Monitor ditto. Prosector ditto.
Mr. Rich. Cuthbert Thompson .	Assistant Inspector's Royal Agricultural Society *Certificate,* 1874. Clinical Clerk *Certificate.*
Mr. Walter Longhurst . .	Clinical *Certificate.* Monitor ditto. Prosector ditto.
Mr. George Farrow . . .	Clinical *Certificate.* Monitor ditto. Prosector ditto.
Mr. William Garton Dixon .	Clinical *Certificate.* Monitor ditto. Prosector ditto.

Mr. William Robert Hagger	. Clinical *Certificate.* Monitor ditto. Prosector ditto.
Mr. Walter Seymour Bontoft	. Monitor *Certificate.* Prosector ditto.
Mr. John D. Edwards .	. Clinical *Certificate.*
Mr. Arthur Bostock .	. Clinical ditto.
Mr. Murray Anderson .	. Clinical ditto.
Mr. Henry Arthur Muffitt	. Clinical ditto.
Mr. Henry Baker . .	. Clinical ditto.
Mr. Thomas Robert Williams	. Clinical ditto.
Mr. Chas. James Reynolds	. Clinical ditto.
Mr. William Edwin Taylor	. Clinical ditto.
Mr. David Morrison Storrar	. Clinical ditto.
Mr. H. Durrant Gibbings	. Clinical ditto.
Mr. W. H. Jones . .	. Clinical ditto.

After the distribution a vote of thanks to the Chairman was carried by acclamation. This being acknowledged, the Session was declared to be opened.

ENTRANCE OF FRESHMEN AT THE ROYAL VETERINARY COLLEGE.

The College of Preceptors have returned the following gentlemen as eligible to enter on their studies, they having passed the Matriculation Examination. We are much gratified in finding that the rejections have been fewer than on former occasions, as it is good evidence that the educational standard of the profession is being substantially raised higher year by year.

Mr. James G. Stephens.
— Alfred E. Dalby.
— Edward Miles Perry.
— Robert Ernest Hoile.
— Thomas Frederic Hogben.
— Thomas Hargreaves.
— Frederic Augustus Auger.
— John Foulston.
— John J. Corcoran.
Mr. James Cook.
— William James Worster.
— Frank Henson Gibbings.
— Henry J. Kelly.
— Frederick Spencer.
— John L. Brunskill.
— John Henry Loft.
— John Herbert Callow.
— Frederick W. Forsdyke.

Mr. Samuel O. Langley.
— William Edmund Brown.
— Jno. W. Rigby.
— Matthew Hedley.
— Edward Allen.
— T. W. Handford.
— J. S. Arnall.
— P. Gregory.
— Fred. William Taylor.
— Thos. Pritchard.
— Elias Kyffin.
— George Grigson.
— Jn. Albert Clarke.
Mr. Henry P. Webb.
— George R. Dudgeon.
— Charles Sheather.
— J. W. A. Morgan.
— Richard A. Giltro.
— Chas. Leveson Gore.
— Richard Glover.
— Edward Moore.
— William T. Briggs.
— W. Comerford.
— Frank A. Holmes.
— A. J. Sewell.

ADMITTED ON CERTIFICATES.

Mr. Jno. Dring.
— Alfred Eadon.
Mr. Walter Barber.

In addition to the obligatory subjects, sixteen candidates passed the higher examination.

ARMY APPOINTMENTS.

WAR OFFICE, *October 22nd.*

Royal Artillery.—The following Veterinary Surgeons on probation to be Veterinary Surgeons: Adam Cuppage Webb, *vice* Plunkett, deceased; Arthur Bostock, Murray Anderson.

Veterinary Department.—Veterinary Surgeon of the First Class: William Death to be Staff Veterinary Surgeon, *vice* W. Partridge, retired upon half-pay.

OBITUARY.

DIED, September 19th, 1875, aged 37 years, Mr. John Edwards, M.R.C.V.S., Abergele, North Wales. His diploma bears date April 29th, 1861.

Also, George Francis Lamb, M.R.C.V.S., Linslade. Diploma dated April 27th, 1864.

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Communications and Cases.

RECORD OF PRELIMINARY EXPERIMENTS WITH THE EGGS AND EMBRYOS OF THE HUSK-PRODUCING STRONGYLE OF THE CALF.

By T. Spencer Cobbold, M.D., F.R.S., F.L.S., Professor in the Royal Veterinary College.

Of all the internal parasites that prove destructive to our domesticated animals, perhaps none are regarded with more aversion by agriculturists than the nematodes, which, in Europe, annually sweep off hundreds, or, it may be, thousands, of calves and lambs. Even a practical man, who commonly experiences some difficulty in concealing his disesteem for science and its abettors, will sometimes condescend to ask the naturalist how it is that his flocks and herds become thus infested and decimated. To be sure, the unfortunate *savant* thus questioned can only give a reply that must in the main prove unsatisfactory, seeing that although it lies in the naturalist's power to demonstrate the source of infection, yet he cannot all at once, and, as it were, miraculously, stamp out the epizootic itself. Nothing short of this will satisfy the practical man, who, as a rule, is utterly destitute of all consideration for the investigator's labour, especially if he be unpaid for his work. Practical men little know the labour involved in exact scientific research, and still less do they seem to be aware of the circumstance that weeks and months of work are sometimes necessary to obtain a single new fact, carrying with it any practical issue of the

smallest possible significance. Oftentimes the more profound the research the less valuable the immediate result; but, on the other hand, it is to the cumulative results obtained by experimental research that we must look for all real, solid, and enduring advances connected with the medical and sanitary phases of the healing art. In this belief the investigator must work on, knowing that, sooner or later, his labours will be recognised even by the practical man. Already, indeed, one perceives with pleasure that the more enlightened of the agricultural community are resolved to encourage scientific research. Possibly this very sensible movement in the right direction may have been brought about in consequence of the recent action taken by the governors of the Royal Veterinary College in view of raising the course of study, and thereby also the status of the veterinary pupils of our College. Be that as it may, no further apology is needed on my part for calling attention to these preliminary experiments, made with the view of clearing up certain difficulties respecting the source of the husk- or hoose-producing strongyle.

As intimated in the previous number of this Journal, Messrs. Farrow, of Durham, recently transmitted to the College a good *post-mortem* illustration of the so-called parasitic bronchitis of calves. Having, in the first instance, employed the specimen for class purposes, I resolved, in the next place, to institute some experiments with the eggs of the worms.

In reference to the case itself, Mr. George Farrow informed me by letter that the calf was one of a herd of seven, whose ages, respectively, varied from four to six months. At the time of his writing (October 20th) the remaining six animals were progressing favorably towards recovery—a result which Mr. Farrow attributes to the employment of inhalations of turpentine and savin, combined with the internal administration of tonics. In regard to this plan of treatment, and in reference to the source of infection, he adds:—"I should have preferred trying the inhalations of chlorine gas, but as the patients were so very young and in poor condition, I deemed it advisable to try a milder course of treatment."

"The history of the case is brief. The cattle are on a very dry and well-drained farm, but during the summer there was a great scarcity of water, and they were supplied from a stagnant pool which eventually became dry. This, in my opinion, is where the disease originated."

Mr. George Farrow's opinion is probably quite correct, being altogether in harmony with the most recent results of

scientific research as made known more particularly by the writings of Leuckart. Almost all that we know in reference to the development of strongyles, taken as a group, is due to the labours of the Leipsic *savant*, whose recorded results I have repeatedly expounded to our college pupils, amongst whom Mr. George Farrow was one of the most distinguished. But the facts thus conveyed do not explain the whole truth; or, rather, they convey it only in a very general and inexact way. From the investigations of Leuckart we are acquainted with the entire genetic changes of the little *Olulanus* infesting the cat and mouse; and we also know all the developmental phenomena of *Trichina*. Coming still more closely to the strongyles, Leuckart has likewise supplied us with a knowledge of the habits, modes of growth and wanderings of *Cucullanus*, whilst the late lamented Russian traveller, M. Fedtchenko, obtained very similar results by experiments with the embryos of *Dracunculus*. Even more satisfactory results were secured by Leuckart in regard to *Dochmius trigonocephalus*, but all his efforts in connection with the rearing of the true strongyles were productive only either of incomplete or of entirely negative results. His experiments were made with several species, such as *Strongylus armatus* of the horse, *S. rufescens*, *S. hypostomus*, and *S. filaria* of the sheep and *S. commutatus* of the hare. Still, as regards the strongyles, partial as the results have thus far appeared, there cannot be a doubt that his successes with several allied nematode species form a key by which we may yet unlock and expose to view the entire life-history of that specially obnoxious form under consideration, namely, the *Strongylus micrurus*. To sum up the whole matter in a few words, Leuckart supposes that all these strongyloids require a change of hosts before they can take up their final abode in the sexually mature state. This he infers especially because their respective embryos display characters very similar to those exhibited by *Olulanus*. He believes that either small molluscs or insects and their larvæ play the *rôle* of intermediary bearer. His experiments with the embryos of *Strongylus filaria* prove that these larvæ can be kept alive for several weeks in moist earth, and that whilst so conditioned they undergo a first change of skin within a period varying from eight to fourteen days. Experiments on sheep, made with these moulting larvæ, led only to negative results.

So far as I am aware the scientific position remains where Leuckart left it. Other entozoa have formed the subject of observation and experiment, and some of the results have been most satisfactory, especially those obtained by Schneider

in respect of the *Echinorhynchus* of the hog. Stimulated by these efforts, and partly also by my not inconsiderable success with the cestodes, I have made a new attempt with these nematode larvæ. If I cannot say that these results are all I could desire, I can at all events affirm that they appear to be important. They will of course need verification, and all the more so because these preliminary steps have been conducted at a time of the year which is evidently unfavorable to this sort of inquiry. Even should my conclusions prove false, the record of the discipline, as a first contribution towards a correct solution of the problem, may not be altogether without value.

On the 22nd of October, at 1 p.m., I placed the entire egg-contents of the uterus of a *Strongylus micrurus* on a glass slide hollowed out in the centre. Probably something like ten thousand ova were thus brought under observation; yet only three were noticed as freed from their shells, probably as the result of accidental rupture. Two of these displayed lively movements. In round numbers, the ova gave a measurement of $\frac{1}{300}$ of an inch in length by $\frac{1}{750}$ of an inch in breadth; whilst the free embryos measured about $\frac{1}{90}$ of an inch long, and less than $\frac{1}{1000}$ of an inch in thickness. The integument of the embryo displayed neither markings of any kind nor any double contour. The contents of the worm were granular throughout, these granules being crowded in the centre of the body, but scarcely visible towards the head and tail, where for a considerable space (fully $\frac{1}{300}$) the worm was perfectly transparent. No trace of any sexual organs or their outlets was visible. An examination of numerous eggs and free embryos obtained from near the primary bronchial bifurcations in Mr. Farrow's specimen yielded the same microscopic results, the only thing worthy of remark being that the embryos from the mucus seemed much more lively than those which, as I suppose, had accidentally escaped their shells.

At 1.30 p.m. I placed some free embryos in two watch-glasses, one containing water and the other saliva, and placed them before the fire. Being called away professionally, I found on my return at 3 p.m. that evaporation to dryness had occurred in the interval. All my attempts to resuscitate the embryos by moisture proved unavailing, a result which, though negative, proves how little capable these embryonic creatures are of enduring desiccation. I have often noticed this when dealing with other nematodes; the young of Dracunculus and many Anguillules, on the contrary, being capable of resisting

dryness for a long period, as is well known. The practical significance of these facts is not without value in relation to the choice of dry pasturage grounds for the rearing of young cattle. I may add, that whilst half an hour's immersion of the dried embryos failed to restore any sign of life, the previous warmth and moisture had caused many more embryos to escape their shells during the time they were placed before the fire.

At 4 p.m. I passed some very rich mould through muslin. Some of this finely sifted earth I placed in a watch-glass, adding a little water to moisten it, and also numerous eggs and free embryos. In a wine-glass and also in a small jar I placed some coarse earth with water added to make thin mud, and to both of these I added not only eggs and embryos, but also portions of the reproductive organs of the adult female worms.

On the 23rd of October, at 2 p.m., I examined the contents of these vessels. All the embryos in the vessels containing the coarse earth were dead, but several were found alive in the watch-glass containing the fine moist mould. Structually these latter had undergone no perceptible change beyond a somewhat closer aggregation of the somatic granules.

Although the embryos in the coarse wet mud had perished, the eggs with unhatched embryos appeared to have retained their vitality. Of this fact, indeed, I subsequently obtained abundant proof; and I also satisfied myself that the death of the embryos had not resulted either from the coarseness of the earth or from excessive moisture, but from the pressure of the numerous shreds of the uterine tubes which I had somewhat carelessly added to the vessels. Previous experiments, conducted many years back, had indeed taught me that few if any nematoid larvæ can resist the fatal action of putrid matter, however slight the putrescence.

Having removed the offending shreds, I next placed a quantity of the living ova together in the earthenware jar, and allowed the earthen contents to become much drier by evaporation before the fire. I also left others in a watch-glass which was placed under a bell-jar which covered several ferns.

On the 25th of October I removed particles of the moist earth, altogether weighing about two grains; and, on submitting them to microscopic examination, had the satisfaction to observe about a dozen living embryos, some of which exhibited very lively movements. There was not the slightest indication of putridity; nevertheless, I noticed several shreds of the adult worms whose presence had been accidentally over-

looked, and, curiously enough, all the embryos subsequently removed from the immediate neighbourhood of these decomposing shreds of tissue were almost motionless and apparently in a moribund condition. On examining the contents of the watch-glass placed under the fern shade, I noticed several points of interest. First of all the earth contained strongyle embryos, such as I had seen before. Secondly, the surface of the mould was being traversed by three or four briskly moving *Thysanuridæ*, hunting about with all that restless activity (which Sir John Lubbock has so well described) and striking the earth with their antennæ, as if they were being employed as pleximeters. Thirdly, in marked contrast to the behaviour of these I noticed several slow moving *Acaridæ*, apparently also employed in searching for food, but in a much more deliberate manner. And lastly, whilst thus engaged, the surface of the mould in the centre of the deep watch-glass was suddenly upheaved, by which I was at once made aware of the presence of another most welcome and unexpected intruder. In short, an earth-worm had crept from the dry mould in which the ferns were growing, and had, as I suppose, from choice, taken up its temporary abode in the soft moist experimental earth contained in the watch-glass. When contracted, this *Lumbricus terrestris* was barely an inch in length. On placing it under the half-inch objective glass, I noticed a single embryonic strongyle adhering to the skin, but not firmly, and evidently only in an accidental way, so to speak. It was clear to me that it possessed neither the intention nor the power to penetrate the chitinous integument of the earthworm.

Having in the next place removed the *Lumbricus* with a pair of forceps, and having washed it under a current of water, I snipped off the lower end of the body, and allowed some of the intestinal contents to escape on a clean glass slide for separate microscopic examination. Immediately, to my great satisfaction, I found that the fæcal contents thus escaped displayed a large quantity of my strongyle ova, enclosing still living embryos, and in addition several free embryos presenting characters which declared that they were from the same source. Clearly they had been ingested by the earthworm along with its ordinary food. One or two of them were conspicuously larger than their fellows, but the structural changes they had undergone were not so marked as to lead me for a single moment to associate them with any of the various sexually mature and other nematoid worms which have been described as normally infesting the earthworm. I had no doubt whatever that such slight structural

changes as were now discernible had entirely resulted from the growth and development consequent upon this accidental admission into the body of an intermediate bearer which may or may not prove to be its legitimate territory. It will be seen that my subsequent observations have only tended to confirm the truth of this view. Accordingly I made a careful examination of one of these larvæ whose very active movements, however, were such as to render the process exceedingly tedious. The earthworm itself, or rather its unequal halves, were placed in a fresh watch-glass containing ordinary mould. The larvæ or embryos obtained from the earthworm now measured about $\frac{1}{80}$ of an inch in length; their heads exhibted a short and simple chitinous buccal tube, whilst their tails were somewhat more pointed and bent upward. The somatic granules were more crowded, rendering the position of the intestinal tract decidedly more marked; though, as yet, the differentiation gave no indication of the formation of a distinct intestinal wall. There was no perceptible increase of thickness of the body of the embryos. The results thus far naturally encouraged me to procure some fresh earthworms for experimental purposes.

On Tuesday, the 26th of October, I found that the halves of the earthworm were alive, and I left them undisturbed in rather dry mould, freshly added. To a watch-glass containing newly sifted earth and embryos I added a garden-worm, which was rather sluggish from the cold; and in the original jar I placed another smaller and very active earthworm obtained from my garden the same morning. This *Lumbricus* finding the soil in the jar congenial soon buried itself. Another and larger earthworm subsequently added refused to follow this example, and was therefore removed from the jar. Believing the fine and artificially prepared soil to be still much too moist, I caused further evaporatien; and I have since found that the thicker the mud thus formed the more suitable it proves as a residence for embryonic nematoids and earthworms alike.

On the 27th I found the small earthworms in the jar burrowing freely and throwing up fæcal casts. From one of my watch-glasses the worm had escaped, its place being occupied in the meantime by an actively crawling *Julus*. I put a second *Julus*, obtained from the mould, in the fern jar to form a companion (in view of other experiments if time permitted), and I also added a fresh earthworm, covering all by another watch-glass inverted, which I thought would prevent their escape.

In the next place I examined the halves of my original

experimental earthworm. They were scarcely capable of motion, but they retained a certain amount of vitality. The tail was the more active half, and unfortunately, in consequence of an interruption, it was afterwards lost. Carefully washing the superior half, and transferring its contents to a glass slide, I immediately detected under the microscope a large number of embryos. They were in a state of marked activity, the largest having increased to about $\frac{1}{50}''$ of an inch in length, whilst their structure had become correspondingly advanced. Here again there was no room for doubt as to their source, especially as they individually displayed different degrees of organisation, all answering to one and the same embryonal type. I now observed a distinct œsophagus, the rest of the intestinal tract being still more conspicuous than heretofore; though, as yet, no true cells marked the limitation of the stomach and chylous intestine.

After an hour's immersion in cold water, some of the larvæ became much less active, whilst others were motionless, so that I feared all were about to perish. In the hope of keeping a few of them alive, I now added to the slide some finely sifted grains of mould, placing the slide under a small bell-jar which protected some of my ferns. The remains of the moribund earthworm were also covered with mould.

Other larvæ, derived from the earthworm, were placed on there moist pinnæ of a living fern frond which were supporting small drops of water, for by this process I hoped in some measure to imitate the dew which naturally condenses on the grass and fodder of our low-lying fields. At 3.15 p.m. of the same day I also examined a fresh worm-pellet from the jar, and found it to contain the same living strongylè embryos which as heretofore had not exhibited the slightest advance either in respect of size or structure.

At noon on the 28th I again sought for the larger larvæ, first of all on the slide covered with fine earth, and afterwards within the remains of the upper half of the original earthworm. On the slide I could detect none, but within the intestine of the worm there were still two living larvæ left whose characters corresponded precisely with the largest that I had previously obtained from the same source only the day before. They had undergone, however, no further change in structure, and their measurements remained precisely the same.

At 12·30 p.m. I snipped two or three of the terminal fern fronds on which I had a few advanced larvæ. On examination under the half-inch objective I immediately detected one of the larvæ cruising about most actively. On

adding a drop of water he soon rushed across the field of the microscope, his movements being thoroughly eel-like. The size of this larva had so much increased that it was now visible to the naked eye; measuring, indeed, as much as $\frac{1}{30}''$ of an inch from head to tail. Moreover, its organisation had advanced in a marked degree. Thus, the digestive organs were better defined, and on one side of them there appeared a regularly arranged congeries of cellules forming the commencement of the reproductive organs. As yet, however, I could not pronounce as to the sex.

At 1.45 p.m. I again examined a few grains of earth from the jar, when I at once noticed five or six active embryos whose structure failed to show the slightest advance upon that originally described. It was evident that the jar contained thousands of them; and since no ova were found, it became probable that all their embryonic contents had escaped to swell the number of free larvæ, leaving their very delicate envelopes to perish. I think I had hit upon the most suitable degree of moisture favorable to this result.

In the next place I examined the earthworm placed in the infested soil between two watch-glasses. It had escaped. This obliged me to transfer the mould to a rather wide-mouthed and open phial, in which four more fresh lumbrici were placed. I feared the closing of the bottle would be detrimental.

Later in the day I selected an earthworm which had not been exposed to strongyle infection, but which was in a moribund condition. In the intestine there were several free nematoids and also several psorosperms of the genus Monocystis so well illustrated a few years back by E. Ray Lankester. As to the nematoids, which were filariform, they neither corresponded in size nor structure with my strongyle embryos.

At 1 p. m. on the 29th I renewed my examination of the larva removed from the fern-pinnule. It showed a further stage of growth, the male character of the reproductive organs having become apparent. The now tolerably well-formed vas deferens had pushed the chylous intestine on one side, whilst a series of caudal rays, five on either side, supported two narrow membranous wings which I supposed to represent the lateral lobes of the hood of the adult strongyle. Whether this view is correct or not, the changes thus far described proved highly instructive.

At 1.30 p. m. I submitted the intestinal contents of four

fresh earthworms removed from my garden, but no nematoids were found in any one of them.

About 2 p.m. I removed another large and active strongyle larva that had been reared on a second fern-pinnule. It was of the same size as that previously described, but was in the act of changing its skin. It was then put aside with the other under the glass shade of the fern-pan.

At 3 p. m. I intended to examine one or more of the earthworms placed in the open-mouthed phial, but all had escaped and buried themselves in the fern-mould out of reach.

At noon on the 30th I renewed my examination of two large larvæ whose developmental changes I had so far been instrumental in producing from the time of their passage from the egg-coverings. At least I believe that the sequence of changes thus far noticed could only refer to the species under consideration. At present I can see no escape from this conclusion. Both larvæ were active; but the moulting one had now completed its ecdysis. Its sexual distinctiveness had become yet more pronounced by the formation of two rather short and stout spicules, the point of the tail displaying a very minute awl-shaped projection. The lateral membranes had not visibly increased in size. One of these larvæ, the first under observation, now perished from the injuries sustained during inspection.

Again, and later on in the day, I sought to clear any further doubts that might suggest themselves respecting the source of these larvæ, by once more submitting the intestinal contents of two fresh and uninfected earthworms to careful scrutiny. In the first worm no parasite could be found, and in the second only one minute nematoid; its organisation, which was sexually incomplete, neither corresponded with my strongyle embryos, nor, so far as I could judge, with Goeze's *Ascaris minutissima microscopica* (the *Anguillula lumbrici* of Diesing and others), nor with Dujardin's *Dicelis filaria*. It was a very long and narrow creature, but I lost it whilst attempting to secure an accurate measurement. At a guess by comparison I should say it was about $\frac{1}{50}$th of an inch in length, and not more than $\frac{1}{1500}$th in breadth. I made a rough outline sketch of it.

In view of further observations I now placed five more earthworms in the jar containing strongyle embryos, and I also placed six others in the phial which contained coarser mould, and only a comparatively small number of the original strongyle embryos. The phial was closed with a cork and half buried in the fern mould of one of my larger Wardian fern-pans. Before this transfer was made I again took the

opportunity of ascertaining by microscopic evidence that the embryos lodged in the coarse and fine mould had none of them made the slightest advance in organisation. The worms placed in the jar immediately proceeded to bury themselves.

At noon on the 1st of November I sought to get further results from the only large free larva which now remained to me; for the fern-pinnules on which the larvæ were originally placed had dried up and no third specimen could be discovered. Structurally, this larva presented no further advance. It therefore appeared to me necessary to place it under new conditions in view of exciting some further progress towards sexual maturity and adult growth. To transfer it to the bronchus of a living calf would of course have been the crucial experiment, but the hopelessness of getting any satisfactory result from this solitary transfer deterred me from the attempt. On a larger scale, with many larvæ, a positive issue would of course prove decisive. Accordingly, the only thing I could do in partial imitation of nature was to try to induce some further changes by placing the larva in saliva, kept warm artificially. As a first step I immersed the creature in a little of the secretion added to the glass slide, when it immediately displayed very lively movements, such as could only be fitly described as frantic. This encouraged me to replace the slide under one of the fern shades without in the meanwhile applying any additional heat. I then left it.

At 12.30 p. m. I selected three of the eleven worms lodged in the infested earth, namely, two from the jar and one from the closed phial, and made a microscopic examination of their respective intestinal contents. In one of the worms from the jar I found several embryos clearly referable to my strongyles, their structure showing scarcely any advance upon that exhibited by the embryos in the mould itself. The weather was now excessively cold and the larvæ were motionless; nevertheless, the application of warmth showed that they were by no means dead. The fæcal matter obtained from the worm that had lived in the phial displayed an immense number of infusoriæ of the genus *Bacteria*, which rushed about rapidly over the field of the microscope. No other signs of life were detected.

On the 2nd of November I found my strongyle larva alive, but its movements, though active, were by no means so active as on the previous day. No fresh structural changes had occurred.

At noon on the 3rd the larva at first lay almost motion-

less in the now thick and ropy saliva ; nevertheless, on applying a thin glass cover its movements became tolerably vigorous. During its quiescent state I succeeded in getting a good view of the caudal rays and other imperfectly developed organs, of which I retain figures.

Having now satisfied myself that new conditions were necessary to enable the larva to arrive at sexual maturity, I sought to transfer it to a glass tube filled with fresh saliva. This transfer was a matter of difficulty. After passing nearly all the old ropy saliva into the tube, I examined what was left on the slide and found that the larva was gone. I concluded it was in the tube, which, in order to keep the contents warm, I carried about concealed in my under-clothing during the day and placed in my bed during the night. This increase of temperature, however, caused decomposition of the saliva ; so when next day I diligently sought for my experimental nematoid it was nowhere to be found. I should mention, also, that a pocket-lens examination of the tube several times during the previous day had been alike unsuccessful. Thus terminated my observations on the first set of embryos, which, as I have little reason to doubt, had enjoyed their temporary sojourn in the intestinal tract of the earthworm, and which had certainly afterwards undergone a series of marked structural and morphological changes, accompanied with ecdysis.

The weather had now been for several days exceedingly cold, but on the 4th a favorable change set in which led me to hope that I might be able to verify the facts above recorded. Accordingly, as a new point of departure, I re-examined the fine mould, and at once found my embryos in a high state of activity. The mould, however, appearing too moist for the earthworms, I permitted further evaporation before closing the jar with a glass cover. Four days subsequently I examined the intestinal contents of two of the earthworms. In the one of these, an inch in length, no parasite of any kind could be detected ; but in the other, which was beyond three inches in length, there were numerous *Opalinæ* besides several strongyle embryos, the latter presenting characters not visibly in advance of those still living in the mould. All of them were motionless, as if they had not got over the shock produced by previous cold. Moreover, the weather had again become cold ; and thus, when I again inspected my experimental embryos living in the jar, I also found them motionless ; so different from their behaviour on the 4th. However, since a further result with the earthworm embryos appeared possible, I placed some of the fæcal matter, already

ascertained to contain a few of them, on the fronds of a thoroughly moist and dew-covered *Asplenium bulbiferum*. This plant was in a fern-pan which had the advantage of considerable fire-warmth during the day. When, however, on the 15th of November, I examined the fæcal earth removed from several of the pinnules, I failed to find any of the embryos. Possibly they had wandered; for the entire frond was covered with dew-drops, which was not the case with the fern that I previously experimented on with such satisfactory results. At all events, whether they had wandered or had perished, their apparent absence in no way affects my previous record; and the more so since only a few had been observed in the fæcal matter. The smallness of the number found in the earthworm was also readily accounted for. Thus, when at 1.30 p.m. on the 15th I made a diligent search for embryos in several grains of the fine mould, not a single young strongyle could be detected. This was the first time I had failed to obtain them since the investigation commenced. Possibly some few of the many thousands may remain; but I fear that the frost of the previous night may have killed them. The earthworms are still alive and in good condition.

In conclusion, I may observe that every experimenter with helminths is well aware how unfavorable the winter season is for this kind of research. If a repetition of this inquiry in the spring or summer should confirm the present outcome, it will prove a clear addition to our knowledge of the development of the strongyles, all of which probably require a change of hosts. Meanwhile, I think that the data above given render it highly probable that the larvæ of the hoose-producing strongyle (*S. micrurus*) are passively transferred to the bodies of setigerous annelids, which are thus called upon to act as intermediate hosts. If this be so, it is further certain that important structural changes with ecdysis follow after their escape from the earthworms or other annelids; moisture, dew, or water, being essential to this degree of progress, which marks the penultimate stage of growth. Final passive transference, either with the fresh fodder from swampy grounds, or it may be from pond water, ultimately enabling them to acquire their definitive sexual form, size, and other adult characteristics.

If this record has no immediate result beyond that of encouraging others to work at the subject, independently, its publication in a journal devoted to the practical requirements of veterinarians will not, I feel sure, be considered unacceptable.

THE PRINCIPLES OF BOTANY.

By Professor James Buckman, F.G.S., F.L.S., &c. &c.

(*Continued from p.* 753.)

The Gentianacæa—*Gentianworts*—come so near the Dogbanes that it will be most convenient to describe them in this place, reserving the Broomrapes for a future paper.

"Diagnosis.—*Gentianal exogens, with no stipules, simple stigmas at the end of a manifest style, parietal placentæ, and regular flowers.*"

The order is well represented by some native plants of great beauty and interest, particularly *Gentiana*, *Erythræa*, and *Menyanthes*, of which the former genus may well be taken as typical.

In speaking of the genus Gentiana Mr. Masters says—

"It is not only for their beauty that these plants are prized, but for their medicinal properties. All the species are, to a greater or less extent, pervaded by a pure bitter principle which confers valuable tonic virtues on them, not always unaccompanied by a slight degree of narcotic or arcid effect. The roots of *G. lutea* are principally used in this country; they are collected in Switzerland and the Tyrol. The roots of *G. purpurea, G. punctata, and G. pannonica* are used for like purposes; indeed, almost any species might be employed that could be obtained in sufficient quantity. *G. cruciata* has been invested with imaginary virtues because its leaves grow in the form of a cross; it has been recommended in hydrophobia. The Swiss make a liqueur from some of the species. Some of the Himalayan and North American kinds are used, like the European ones, as tonics."*

We have some beautiful English species of Gentians, which have from time immemorial been favourites, not only with the botanist, but with the herbalist; the former for the beauty of the flowers, and the latter for the bitter principle with which the whole of the species is more or less pervaded, and which, indeed, exists to a greater extent in the genus Gentiana than in any others of the order.

The *Gentiana lutea* is extolled for its uses in the human school, the root being the part of the plant employed in medicine. Pereira says it is employed principally in the following cases:

"1. *In dyspepsia and other gastric disorders* attended with

* The 'Treasury of Botany,' vol. ii, pp. 526-7.

debility or torpidity, and unaccompanied by any marks of inflammation or irritation, or great susceptibility of the digestive organs, Sesquicarbonate of ammonia is a very valuable adjunct.

"2. *In intermittent diseases* it may be used where cinchona is admissible, but it is much inferior to the last-mentioned substance. "Joined with galls or tormentil in equal parts, and given in sufficient quantity, it has not failed," says Dr. Cullen, "in any intermittents in which I have tried it."

"3. In many other diseases marked by weakness and debility, but unattended by fever or gastro-intestinal irritation, gentian is admissible and useful; as in some forms of gout, hysteria, uterine disorders, &c. It is a constituent of the *Duke of Portland's powder for the gout.*

"4. *Against worms* it has been used as if it possessed some specific influence.

"5. In surgery it has been used for discutient fomentations; also, in the form of fine powder, as an application to issues and to promote their running; and as a tent, to enlarge and cleanse fistulous apertures."*

In our younger days "junction" was highly popular with the poor people, so much so that ingredients for the preparation of its compound infusion, *Infusum Gentianæ compositum*, were put up in packets with directions for the patients to make it themselves. Whether this little employment added to the qualities of the medicine we are not prepared to say, but it is certain that "nothing brings the weak man sooner to a stomach (appetite) than junction mixture." Of late gentian has been recommended in the treatment of dipsomania; and certain it is that where there exists that inordinate craving for drink which is implied by the above term, taking infusion of gentian with ammonia has been found to allay some of the distressing symptoms which the hard drinker suffers when the usual stimulant is withheld.

Gentian root is much used in the treatment of the lower animals. Professor Tuson speaks of it as follows:

Actions and Uses.—*Internally*, tonic and stomachic. *Externally*, occasionally employed as a mild excitant and antiseptic.

Doses.—*Horse*, 2 to 4 drachms. *Cattle*, 2 to 4 drachms. *Sheep*, 1 to 2 drachms. *Pig*, ½ to 1 drachm. *Dog*, 10 to 20 grains.

Modes of Application.—In the form of bolus; Infusum Gentianæ compositum; Tinctura Gentianæ composita.

* Pereira, 'Materia Medica,' vol. ii, part i, pp. 625-6.

Preparations.—Infusum Gentianæ compositum; Tinctura Gentianæ composita.*

It is, however, more used by the cow-leech than by the regular practitioner, as it usually forms an ingredient in the horse and cattle powders for which most cow-leeches, cowmen, and carters have their own favourite "resait." However, we make bold to say that, as bought at too many country druggists', and especially some of those who put a plaster model of the noble animal in their shop window, "junction powder," has but little of gentian in it, and we are not quite sure that we have not seen specimens in which it has been omitted altogether.

The botanical student will do well to attentively study this order, as all its members are highly attractive. Our native species are somewhere about ten in number, including the Gentians, Centaury, Yellow Wort, Buck Bean, &c.

Professor Lindley refers to as many as 60 genera, including 450 species, and we cannot do better than to extract his summary of the general uses of the order:

"The common Gentian root of the druggists, a pure and intense bitter, is for the most part *Gentiana lutea*, an herbaceous plant, with axillary whorls of yellow flowers, common on the Alps of Europe. It is principally employed as a tonic, but sometimes relaxes the bowels, producing nausea and a kind of intoxication. *G. campestris* and *Amarella*, common on the heaths and hills of some parts of England, are domestic substitutes, as are *G. Gatesbæi* in the United States, *G. kurroo* in the Himalayas, and *G. punctata*, *pannonica*, *purpurea*, and others, on the continent of Europe. *G. cruciata* has been superstitiously believed to possess especial virtues because its leaves grow in the form of a cross, and it is one of the thousand panaceas for hydrophobia. *Agothotes Chirayta* a Himalayan annual, is remarkable for the pureness of its bitters. The whole plant is pulled up at the time the flowers begin to decay, and dried for use. Its febrifugal properties are in high estimation with European practitioners in India, who use it instead of cinchona when the latter is not to be procured. *Cicenda hyssopifolia*, a common Indian annual, *Erythrea centaureum* (Centaury), a beautiful little wild plant with pink flowers, *Chlora perfoliata*, various species of Lisianthus, Tachia, Sabbatia, Contoubea, &c. &c., possess qualities very nearly of the same kind, varying principally in intensity, and are employed as substitutes for gentian in different countries. The root of *Frazera Walteri*, a North American biennial is a pure, power-

* 'Veterinary Pharmacopœia,' p. 105.

ful, and excellent bitter, destitute of aroma, and is fully equal to gentian. When fresh it is reported to be emetic and cathartic. The roots have been imported into Europe as a sort of calumba, and have acquired in consequence the name of American calumba. *Menyanthes trifoliata*, a common bog plant called Buck Bean (quasi Bach or Beck, i.e. Brook Bean), is intensely bitter. Its rhizome is reckoned one of the most valuable of known tonics; but large doses produce vomiting, and frequently powerful diaphoresia. It is recommended in intermittent and remittent fevers, gout, herpetic complaints, rheumatism, dropsy, scurvy, and worms. Withering says that it may be used as a substitute for hops in making beer. *Villarsia nymphæoides* acts in a similar way, but is weaker.*

We see, then, from these remarks, that the Gentian family is one containing many individuals, most of which may be employed as substitutes for the others; it is thus an order illustrative of that natural grouping of plants which is of so much value in systematic botany.

RUPTURE OF THE COLON OF A HORSE, ASSOCIATED WITH VOMITING, FROM EATING THE FRUIT OF THE *CRATÆGUS OXYACANTHA*.

By John Gerrard, M.R.C.V.S., Market Deeping.

I forward particulars of the following case, not because it can be considered a very uncommon one in the horse, or that it possesses anything very unusual, but because a certain amount of practical and pathological interest attaches to the fact that the animal lived for four days after the rupture had taken place, and also because the act of vomition was observed in the early stage of the case, or at least concomitantly with the supposed time of the rupture.

The subject was a two-year-old, thorough-bred, entire colt, the property of Benjamin Smith, Esq., Deeping St. James's, and was first observed ill about four o'clock p.m. on the 28th September last. He had been in perfect health all his life, was well descended, and had never been housed or haltered until that afternoon, when he was found rolling about in the field, and was with difficulty removed to the

* The 'Vegetable Kingdom,' p. 614.

"crewe yard," about a mile distant. The colt had been observed in the early part of the day eating greedily of the hawthorn berries, but no notice was taken of the circumstance until some of them were ejected through the nostrils in a comminuted condition among the other ingesta.

I saw him about seven p.m., after he had had several "drinks" administered to him without the slightest cessation of the severity of the symptoms. Pulse sixty and full, surface of the body warm, extremities cold, breathing slightly accelerated, at times normal, mouth tolerably clean and moist, mucous membranes injected, belly slightly tympanitic, throwing himself down, rolling over, and instantly getting up again. Pain persistent, with scarcely an interval of ease, unless when lying on his back, a position he frequently assumed.

On his way home from the field he had purged pretty freely; and thinking it a case of spasmodic colic from some irritant in the food, I administered six drachms of aloes in solution, on the principle of "removing the cause and the effects cease." The effects, however, did not cease, probably as the cause could not be thus summarily removed, and I had to administer two or three strong antispasmodic draughts, and also to inject subcutaneously three three-grain doses of morphia, besides warm bathing to the abdomen, and also a mustard plaster, before much improvement was observable. About one o'clock in the morning slight remissions of the pain took place, when the colt would stand for a few minutes, walk round the box, and then lie down again. Pulse was then eighty, conjunctiva injected, mouth dry, tongue contracted, Schneiderian membrane pale and cold; there were also persistent tremors of the fore extremities, with a peculiarly anxious eye, painfully suggestive of impending dissolution.

At nine a.m. on the 29th I found the colt much easier; pulse forty-five and weak, general appearance much the same, excepting that he was hanging down his head, and a dirty watery discharge, mixed with some solid ingesta, was trickling from both nostrils. I learned from the attendant that, about four o'clock he had vomited a quantity of "chewed grass," which he preserved for my inspection. In addition to the "chewed grass" I found small pieces of woody fibre in a disintegrated condition, along with fragments of the kernels of the hawthorn berries and their seeds. While I was examining the stercoraceous mess, the colt laid down and gave a low screeching gulp or two, which was followed by a gurgling sound as of fluid passing up and down the œsophagus. No fluid was emitted, however, until he got up, when it seemed to flow from the nostrils without the slightest effort beyond that of lowering and straight-

ening the head; no coughing was excited by it. He continued to belch and vomit at intervals for more than an hour, but still very little was ejected through the nostrils. It seemed as if the antiperistaltic action of the stomach and œsophagus had been excited by some irritant that they were unable to get rid of. Musing on the circumstances and the attendant phenomena, I was vividly reminded of once being in a similar condition from the effects of a sea-voyage, and of the sedative and tranquilising effect of half a glass of brandy. Acting on the belief that the phenomenon was substantially the same as I had experienced, although arising from a different cause, I administered half a pint of brandy in about an equal quantity of water. The effect was almost instantaneous, and well marked. No more attempts to vomit were observed, nor did he try to lie down again during the remaining three days and nights of his life.

At twelve o'clock same day he seemed much better, would drink cold water, and even nibble a few stalks of *lucerne*. In the afternoon the bowels responded to the aloes and enemata, and he seemed to offer hopes of recovery, even although the pulse was very weak and slow, thirty-five; the temperature was good, the countenance more bright, and the tremors gone. At four p.m. pulse stronger, general appearance better, drinks oilcake-slop, bowels acting moderately, strains and urinates frequently; temperature in the rectum 102°.

30th, nine a.m.—Pulse sixty-eight and thready, temperature 101°, breathing slightly accelerated, symptoms of abnormal pain occasionally; no fæces passed during the night; urinates frequently; extremities cold, with slight sweats on the body; would eat nothing, and drink only cold water. Feed on milk, gruel, and wine.

October 1st—Much the same as yesterday; breathing quicker, pulse fifty-five and weak, no passage; inclined to rest his head on the manger and seems very uneasy; will neither eat nor drink anything.

Gave some gruel and milk, which almost exhausted him.

October 2nd, ten a.m.—Very restless, breathing very short, pulse very faint, legs much swollen, temperature 100°, belly tympanitic and very tender.

On attempting to give him some gruel in the afternoon he fell down and expired about six p.m., or something more than five days after being taken ill.

Sectio Cadaveris.—Thirty-four hours after death, on cutting through the abdominal walls, which were very much distended by that time, a quantity of ingesta was the first to escape,

principally from the hypogastric region, thus rendering it evident that a rupture of some part of the alimentary canal had taken place. A very extensive and diffuse inflammation pervaded the peritoneum and especially the mesenteric portions of it, and portions of the small intestines were loosely glued to each other and to the parietal peritoneum by soft flakes of lymph, which, though of tolerable tenacity, were gelatinous in consistence and could readily be torn through by the fingers. This effort of nature to repair the breach made it difficult to detach the intestines, and the fact that the colon was pretty free from these adhesions made me suspect that the stomach was the part that had given way.

I found the stomach entire, but very much distended, otherwise healthy ; and when it was removed from the cavity, with about six inches of the œsophagus attached, gentle pressure with the hands almost emptied it of its contents, which were principally the fluid food which had been poured into it for three days previously. The cæcum contained the usual quantity of fluid ingesta. The colon was moderately filled with ingesta of healthy consistence, and consisted principally of grass, with small portions of woody fibre and crushed kernels of hawthorn berries. At the *pelvic flexure* was a rupture of about four inches, longitudinally, in the convex border, and about an inch from one extremity of the rupture was another perforation in the same line of about one and a half inches. The edges of the rupture were of a zigzag form, but had a rounded-off or swollen appearance, as if it had existed for some time. On the peritoneal coat surrounding the rupture were a number of bands of lymph attached to the omentum. In these bands could be seen small pieces of the ingesta, which must have escaped from the gut before the effusion of lymph had surrounded them, thus rendering it certain that the lesion must have existed for some time, probably had occurred in the early stages of the attack and been occasioned by the animal's throwing himself violently down during the paroxysms of pain.

The other organs, so far as I was able to examine, were perfectly healthy. Thinking it rather an interesting case, and not having time to minutely examine the parts, I cut off a foot on each side of the rupture, and forwarded it to Professor Axe for his opinion as to how long the rupture might have existed before death, and whether the vomiting caused the rupture or was caused by it. In reply he states—

"I find, besides the two rents in the gut to which you called my attention, extensive ulceration of the intestine at two other points. I also notice a scrofulous condition of the

isolated glands of Peyer. From the appearances presented by the parts I am of opinion that the rupture was preceded by a scrofulous condition of the mucous membrane, originating in the Peyerian follicles. In answer to your query, I would suggest that the vomiting was the effect of the rupture, that the rupture is of recent date. The condition of the surrounding parts leads me to think that the mucous membrane first gave way, and that this was soon followed by a breakage in the muscular and serous layers."

This introduces an entirely new element of causation into the case that I was not prepared to find, and which the history of the subject will scarcely warrant.

That ulceration of the mucous coat may have been present in other parts of the intestines, and may have preceded the rupture, is quite probable, but that it should have had a scrofulous origin is, I think, rather improbable.

If ulceration did exist it must have had a cause, and the question is, what was the cause? Ulceration, whether as the result of an irritant introduced in the food or water, or whether of a scrofulous kind, must have been preceded by inflammation to such an extent as at least to induce some symptoms of ill-health, and certainly before perforation took place they would have been manifest.

Not the slightest appearance of ill-health was ever observed in the animal, and he was seen every day by the owner, who is a very good judge in horse matters. He was a well-bred animal, and his dam has been in the possession of the owner for years, and he had been observing to a friend, only a few days before, "how well the colt looked."

It does not accord with my knowledge or experience that a well-bred horse, rising two years, and that never exhibited the slightest symptom of ill-health, should be suddenly taken ill and die in five days from scrofulous inflammation of the intestines. I must leave the subject for the consideration of your readers, and the explanation to Professor Axe. Even admitting that the lesions observed by the Professor were those of typhoid fever, the symptoms manifested would not warrant the conclusion, and the previous history of the case, together with the rarity of it in the horse, puts it almost beyond the bounds of probability.

I incline to the opinion already expressed, that the irritation was induced by something in the aliment, and which caused the prolonged and excessive pains, and that rupture was caused by the colt's throwing himself down while in the paroxysms, the bowels being in a distended condition.

Whether the irritation was caused by the haws is, perhaps,

a doubtful question, but they were undoubtedly present in large quantity, even in the ingesta in the abdominal cavity; and it is fair to infer that they gave rise to the indigestion which preceded the attack, whether they were the cause of the ulceration observed by Professor Axe or not.

The case has a practical bearing on the treatment of colic, as advocated in certain quarters, by the simple administration of aloes and enema.

It is clear, to my mind at least, that if a proper antispasmodic draught had been given in time, followed by a small purge and assisted by enemata, the animal might have been saved, but the administration of aloes alone is quite ineffectual in most cases.

It has also a pathological significance, as showing the length of time an animal may survive a rupture of the intestines, and the strong efforts of nature to repair the injury, as also the difficulty of correctly diagnosing such lesions. I have seen a few cases of a similar kind, but they were all marked by very severe and persistent abdominal pain, which only ceased with life. Whether—if we could directly diagnose such lesions—we should be able to restrict the action of the bowels, and conduct the attendant inflammation to a favorable termination by fomentations and opiates, as is sometimes done in the human subject, is an important and rather doubtful question. It is clear that very great progress was made in this case towards recovery; and if the lesion could have been made out, and a different line of treatment pursued, it is just possible a temporary recovery might have followed.

I am afraid my remarks are already too long without touching on the physiological import of the case as manifested in the attendant phenomenon of vomition. This, with your permission, I may refer to in a future number.

HOW IS PLEURO-PNEUMONIA SPREAD?

By Charles J. Dring, M.R.C.V.S., Weymouth.

A desire respecting pleuro-pneumonia is thus expressed in the November Leader of the *Veterinarian*:—"The matter is important to the veterinary pathologist, and a vast amount of evidence bearing on it must be in possession of the members of the veterinary profession, who could do some good service by publishing the results of their observations." I have therefore been induced to forward a few remarks on the matter

in question, and as a supporter of the views held by Mr. Cox, late of Dublin, which also have appeared in the *Veterinarian* for November; and I venture to make them, not on account of considering myself an authority, but to elicit further remarks from other members of the profession. I am not as yet aware that it is an opinion held only by few of our members, and is apparently opposed to editorial views on this point. None of us, I presume, attempt to dispute that contagion is the most prolific source of the spread of this disease, but that it can have its origin from another source I am strongly of opinion, from observations that have come under my immediate notice, these being based on the occasions of particular outbreaks, two of which I will mention, which occurred in a neighbourhood where pleuro-pneumonia was by no means rife. The first case I would relate occurred about twelve years ago—seven miles from the place where I formerly practised, viz. Bath—on a farm which was between two other farms not a hundred yards distant from each other. Of course, as is usual, several of the animals attacked died, and *post-mortem* examinations were made to verify the nature of the disease. It was an ascertained fact at the time that pleuro-pneumonia had not been known to exist in that neighbourhood prior to the outbreak. The situation of the place was off the main road over one mile, and in a valley protected from the high road by a steep hill. The other outbreak, referred to, occurred last year, and happened in the immediate neighbourhood of Bath. There had been, however, I must say, prior to this, an outbreak about four miles distant in an opposite direction, but from careful inquiry no communication had ever taken place in any way, neither had there been any fresh animals admitted to the stock for six months. I am in this case thoroughly of opinion that the disease had its origin on the premises, and was engendered by the overcrowding of a number of animals in a very close-shut shed, without proper ventilation; there were twenty animals crowded in the place, with scarcely sufficient room for fourteen. These animals being so pent up for several months during the winter, and breathing over and over again the same vitiated atmosphere, would, I think, engender, through the medium of the blood in the lungs, that peculiar ferment necessary to the production of pleuro-pneumonia.

The first animal in this herd was attacked at the end of the month of February, the second at the beginning of April, when three animals fell sick, and subsequent attacks took place at intervals of about thirty days up to July. An

important question here arises: did the whole of the herd receive the virus of pleuro-pneumonia in February, or did each case as it occurred give rise to the succeeding one? If the latter is the case, the incubative stage of the disease would appear to be about four weeks; should the former have been the case, the period would appear to be indefinite. However that may be, it is a matter of great public interest. I consider the rule adopted by local authorities, that of declaring infected premises free and allowing animals to be taken off the premises within the present period allotted after the last attack, to be fraught with great danger, and therefore it would be a question to have well considered for public benefit.

This being the mode of attack in cases of pleuro-pneumonia, it cannot be considered as a highly contagious or infectious disease; that is, in the same degree as "foot-and-mouth disease," which generally attacks the whole herd in the space of about seven days, and rapidly spreads from place to place. Pleuro-pneumonia seldom extends beyond the place of attack, and in consequence its power of infection must be very limited. I am supported on this point by editorial views, "that it requires actual cohabitation with living animals to produce the disease," with which I fully agree.

Limitation of liability to an extension of the disease, by confining its effects to the place of origin, was fully observed in the two outbreaks mentioned. In the first the centre of three farms, scarcely a gun-shot from each other, being all stocked with cattle; in the second the disease did not appear in any other part of the neighbourhood, or extend to the animals in the fields adjoining the shed, although it was so many months in existence, neither did the attacks extend to more than two thirds of the whole herd. Further support of the local origin of the disease, I think, may be deduced from what was formerly the result in the London cow-sheds from overcrowding and ill-ventilation; the sheds, in fact, were scarcely ever free from the disease. In view of the fact, then, of pleuro-pneumonia in its contagious character not assuming the virulent type, as is the case with some other epizootic affections, it becomes a question for our consideration and reflection whether the law of compulsory slaughter, in an economical point of view, should be further recommended by the profession. It is certainly a great waste of an immense quantity of human food, which does not need increasing in price, and, as the law stands, there is no chance given for science to use her energies. If

there be any virtue in medicine, I surely think that pleuro-pneumonia is a disease on which its effects could be brought to bear, combined with proper supervision, isolation, sanitary regulations, and the prohibition of removal from infected premises of all living animals for a greater length of time. I have it from experience that the non-attacks and cured would reach seventy-five per cent. at least. The results of my observations I now beg to submit, with all due deference to more extended experience connected with the matter in question.

FRACTURE OF THE FEMUR IN THE STIFLE-JOINT.

By D. H. Tombs, M.R.C.V.S., Burford.

A CART MARE, six years old, had been kicked on the near hind leg by a horse, and in consequence of the swelling produced by the injury I was called in.

I found that the injury had been inflicted on the inside of the thigh opposite the superior part of the tibia, where that bone is not covered by muscles and is otherwise unprotected. There were scars visible, and the limb was swollen both below and above the site of the mischief. The animal was excessively lame, and could hardly put her foot to the ground.

With hot fomentations, the administration of purgative and afterwards of diuretic medicines, and the frequent application of refrigerant lotions, the swelling began to subside and the lameness became less marked.

In six weeks the mare could walk very well, and the leg was scarcely at all enlarged.

About a week from this time the mare, after lying down on the near side, was unable to rise until assisted, and when got up she was worse than ever. The lameness was excessive, and the limb was very hot and much enlarged, especially at the upper part; great pain was also evinced on pressure being applied to the region of the stifle-joint.

Although crepitation was not to be detected, probably owing to the enlarged state of the leg, the symptoms evidently pointed to a fracture having taken place in or near the stifle-joint.

The mare was placed in slings, her leg well fomented, and sedative lotions applied to it. About a fortnight afterwards

she was released from the slings, but there was no improvement; she then rested the leg, suffered great pain, and her appetite began to fail. Notwithstanding this, as the owner had a forlorn hope that, "some day," she would show signs of improvement, my attendance was continued.

She hopped about the box on three legs, and was frequently observed to lie down on the off side and to get up again without much difficulty. In this state she continued for nearly three months from the time she was injured. One day she got down on the near side, and, in consequence of being unable to rise, she was shot.

The *post-mortem* examination showed that a piece of bone about the size of half a crown had been splintered off the lower and posterior part of the articulatory surface of the outer condyle of the femur, and that caries to the extent of half an inch in an upward direction had taken place. Besides this state of things, diseased action was going on in that portion of the tibia immediately opposite to the fractured part of the femur. The muscles of the leg were all becoming pale and yellow in appearance, and in some places were much softened and infiltrated with fluid.

DISEASES OF THE HOCKS SIMULATING PARAPLEGIA

By "Recluse," M.R.C.V.S., India.

In reply to "Beacon," I have to state that I did not examine the spinal cord of the patients, and of this fact I imagine he is fully cognisant. I regret the omission, but I did not deem it necessary, there being sufficient evidence of disease in the hocks. I will, however, give "the time, exercise my patience, &c. &c.," and publish the result, should an opportunity occur again.

"Beacon" mentions "the natural fossæ." Now, I am so rash as to discredit the existence of "natural fossæ" on the cartilage covering the articular surfaces of either the tibia or astragalus. Degeneration of the cartilage, however, is frequently found, and, taking the wear and tear to which the hock is subjected into consideration, this is not to be wondered at.

I call attention to the following remarks from Mr. Litt's article of August, 1874, published in the *Veterinarian*:

"And a certain amount of stiffness of the limbs generally, but most noticeable in the hocks, which were but slightly

flexed when in action;" and to the "*post-mortem* description published by Mr. J. H. Tombs in the September number of the same Journal."

During twenty years' service it has fallen to my lot to have almost invariably been in charge of large numbers of horses, and I can safely say that I have met with but few cases of "paraplegia," and have never seen a horse rise after being attacked. One of my patients lingered for eight days, but the rest succumbed to the disease on or about the third day, whereas some of these so-called "paralysed horses" were destroyed three and four years after the lameness appeared—one even after a period of six years.

Argument is useless; but I can assure "Beacon" that medical men as well as members of our profession to whom I have shown both specimens and patients (with one exception) endorse my opinion.

He appears to think that egotism prompted me to write, but I hope, should he really think so, he will divest himself of the idea. I have always acknowledged having taken my views of the matter from Percivall's 'Hippopathology,' and I am convinced that they are correct, in spite of the evidence of those talented and energetic men who have dissected "scores of spinal cords and hocks."

I shall decline to discuss this subject further.

There is yet another doctrine generally accepted by the profession, which I disbelieve; it is the occurrence of dislocation of the patella. This avowal may possibly ignite another "Beacon."

VETERINARY TITLES.

By "Observer."

It is high time the public should be made acquainted with the question of "title;" and it is not, perhaps, saying too much to affirm that even many members of the profession are as ignorant upon this question as the general public.

I feel assured that "R.V.C." and "R.C.V.S." are considered one and the same, but a little reflection on the part of a regularly educated member of our profession would settle the matter. I am aware that the *Teachers* of a *certain* school were not educated in Scotland; but that fact does not ignore the other, namely, that the title of Royal Veterinary College is assumed by the school in question. Why do persons assume titles? If they attach so much value to a title as to employ

it without being entitled to it, they must do so by misrepresentation, or, in plainer language, by declaring an untruth.

A few days since I read a certificate which was written by a practitioner who holds the Highland certificate, and I found "M.R.C.V.S.E." appended to his name. All this goes down very well with the public, because they are not better informed. It strikes me that the Royal College of Veterinary Surgeons could easily put the members of the profession upon a proper foundation by going to a little expense in advertising the names of those on the Register. If individuals take this step they are accused of jealousy.

I do not realise "Mackcam's" argument as tenable.

Could a man who received his diploma in London write the letter "E" after his name? I think not. If an Edinburgh graduate is authorised to write "L" after his name, he alone has the power to make the public believe he possesses a double qualification, whilst the London graduate must content himself with the single one. This appears to me a most extraordinary thing, and should at once be set right.

I hold that the letters "L" and "E" merely indicate the school at which a pupil graduated, and nothing more.

In a short time (in a district with which I am acquainted) an opportunity will be afforded the public of learning the true state of things as regards the question of titles. If the Royal College of Veterinary Surgeons do not help us we must endeavour to help ourselves.

PROFESSIONAL FEES.—LETTER FROM MR. FIELD, JUNR.

224, OXFORD STREET, W.;
Nov. 17*th*, 1875.

MY DEAR SIRS,

Will you be so good as to make it known to the profession, through the next number of the *Veterinarian*, that I have just received a letter from a solicitor whom I asked to inquire whether the Taxing Master was justified in allowing veterinary surgeons only one guinea per day when subpœnaed on a trial, as has hitherto been his practice? The gentleman in question writes me as follows:—"I am glad to say that after some difficulty I have succeeded in convincing the Master of the Common Pleas that you and your professional brethren are as much entitled to fees of the highest scale as barristers and doctors of medicine."

This is, I think, so important a decision that it should be forthwith recorded. Very faithfully yours,

To the Editors of the 'Veterinarian.' WM. FIELD, Jun.

Pathological Contributions.

CATTLE PLAGUE.

Cattle Plague is very prevalent in the kingdom of Poland, no less than nineteen different localities being at present infected. It also continues at Ragusa and Cattaro in Austria, and in Buckowina, Galicia, and Dalmatia.

It prevails to a great extent in the Ottoman Empire, especially at Taif.

PLEURO-PNEUMONIA.

Pleuro-pneumonia still continues in Schleswig Holstein, being reported in four parishes in North Dithmarschen. In the Netherlands there is a slight decline in the number of cases.

FOOT-AND-MOUTH DISEASE.

This disease is still prevalent in Germany, and prevails to some extent in Schleswig, Tondern, and North and South Dithmarschen.

It is stated to have nearly disappeared in Portugal.

The Government of the United States has, for the present, prohibited the importation of bovine animals from Great Britain into the States.

THE CONTAGIOUS DISEASES (ANIMALS) ACT, 1869.

"Return of the Number of Foreign Animals brought by Sea to Ports in Great Britain, which on inspection on landing, within the month of October, 1875, have been found to be affected with any Contagious or Infectious Disease, specifying the Disease, and the Ports from which, and to which, such Animals were brought, and the mode in which such Animals have been disposed of.

"Also, whether the Foreign Ports from which the Animals are brought are in Scheduled or Unscheduled Countries, and the Number of Healthy Animals brought in the same Vessels with the Diseased Animals, and the mode in which such Healthy Animals have been disposed of, whether by slaughter or otherwise.

SCHEDULED COUNTRIES.

Ports in Scheduled Countries from which brought.	Ports in Great Britain to which brought.	Disease.	Diseased Animals.						Healthy Animals.*					
			Number of Diseased Animals.					Disposal.	Number of Healthy Animals brought in the same Vessels with Diseased Animals.					Disposal.
			Cattle.	Sheep.	Goats.	Swine.	Total.		Cattle.	Sheep.	Goats.	Swine.	Total.	
Bremen . . .	London . . .	Foot-and-Mouth	...	36	...	...	36	Slaughtered under the instructions of the Privy Council.	...	563	...	...	563	Slaughtered under the instructions of the Privy Council.
Bremerhafen .	Hull	,,	...	5	...	...	5	Ditto	20	98	...	...	118	Ditto
,,	,,	Sheep-Scab . .	...	7	...	...	7	Ditto	260	673	...	...	933	Ditto
Cherbourg . .	Portsmouth . .	Foot-and-Mouth	...	...	...	35	35	Ditto	...	...	...	35	35	Ditto
,,	Southampton .	,,	...	...	...	70	70	Ditto	...	...	...	1519	1519	Ditto
Dunkirk . .	London . . .	,,	...	...	...	24	24	Ditto	...	...	...	23	23	Ditto
Hamburg . .	Goole	,,	2	...	...	...	2	Ditto	23	66	...	...	89	Ditto
,,	Hartlepool . .	,,	9	6	...	...	15	Ditto	64	6	...	...	70	Ditto
,,	Hull	,,	23	2	...	...	25	Ditto	352	325	...	35	712	Ditto
,,	London . . .	,,	...	29	...	...	29	Ditto	...	1808	...	...	1808	Ditto
Havre . . .	,,	,,	7	...	...	...	7	Ditto	408	...	...	...	408	Ditto
Ostend . . .	,,	,,	2	...	...	...	2	Ditto	8	...	...	...	8	Ditto
St. Malo . .	Southampton .	,,	...	...	...	6	6	Ditto	...	...	...	...	...	Note. — The whole cargo was affected.
Total Diseased Animals. .		Foot-and-Mouth	43	78	...	135	256	Total Healthy Animals .	1135	3539	...	1612	6286	
		Sheep-Scab . .	...	7	...	...	7							
		Total . . .	43	85	...	134	263							

* 'Healthy Animals' means Animals which were not found to be diseased on inspection on landing.

UNSCHEDULED COUNTRIES.

Corunna . .	London . . .	Foot-and-Mouth	124	...	...	...	124	Slaughtered under the instructions of the Privy Council.	156	...	...	...	156	Slaughtered under the instructions of the Privy Council.
Dordt . . .	,,	,,	2	...	...	...	2	Ditto	196	735	...	...	931	Ditto
Harlingen . .	Hull	,,	7	...	...	...	7	Ditto	280	...	...	40	320	Ditto
,,	London . . .	,,	2	7	...	...	9	Ditto	342	1433	...	...	1775	Ditto
Lisbon . . .	,,	Pleuro-pneumonia .	3	...	...	...	3	Ditto	30	...	...	...	30	Ditto
Rotterdam . .	Harwich . . .	Foot-and-Mouth	...	16	...	...	16	Ditto	71	3252	...	...	3323	Ditto
,,	Hull	,,	2	2	...	...	4	Ditto	60	59	...	...	119	Ditto
,,	London . . .	,,	23	1915	...	18	1956	Ditto	1154	30743	...	1252	33149	Ditto
Total Diseased Animals .		Pleuro-pneumonia .	3	...	...	...	3	Total Healthy Animals .	2289	36222	...	1292	39803	
		Foot-and Mouth	160	1940	...	18	2118							
		TOTAL . . .	163	1940	...	18	2121							

* 'Healthy Animals' means Animals which were not found to be diseased on inspection on landing.

"Veterinary Department, Privy Council Office, November 9th, 1875."

"ALEXANDER WILLIAMS, *Secretary*.

Facts and Observations.

Statistics of Animals in South Australia.—We extract the following from the 'Particulars relating to South Australia, which have been compiled at the suggestion of the Local Commissioners for the Philadelphia Exhibition':—"In 1840 the whole province could not muster more than 959 horses, 16,052 horned cattle, and 166,770 sheep and lambs. Now the numbers stand at 93,122 horses, 185,342 horned cattle, and 6,120,211 sheep and lambs. The advance in the price of wool, and the favorable seasons which have prevailed during the past few years, have given a wonderful impulse to sheep-farming in the colony, and at the present time it is the most prosperous interest."—*Mark Lane Express.*

Hydatids in the Pathological Museums.—Some papers are now appearing in the *British Medical Journal,* from the pen of Dr. T. Spencer Cobbold, F.R.S., descriptive of the specimens of hydatid disease contained in the pathological museums of the metropolis and elsewhere. The study of parasitic disease is one to which the author has steadily devoted himself, and he is specially qualified for the task he has undertaken. We fear that the pathological museums of our hospitals are too much neglected by the majority of students, who are but little aware of the rich stores of knowledge they contain. Dr. Cobbold is to be thanked for drawing attention to at least one feature of them, and we trust that other departments may also be similarly treated. In the *Brit. Med. Journ.* for the 23rd ultimo the museums of St. Bartholomew's, Westminster, St. Mary's, and the Middlesex hospitals are mentioned, and King's College and the others will follow.—*The Students' Journal and Hospital Gazette.*

Preservation of Hydrochlorate of Morphia.—According to M. Vidal, a solution of hydrochlorate of morphia will remain unchanged for six months if it be mixed with chlorate hydrate. The following is the formula recommended:—

Distilled water	10·0 grammes.
Hydrochlorate of morphia .	0·2 „
Chloral hydrate	0·4 „

or

Distilled water	1 fluid ounce.
Hydrochlorate of morphia .	87½ grains.
Chloral hydrate	175

—*L'Union Pharmaceutique.*

Anæsthetic Statistics.—The following statistics are quoted by a French Dental Journal from the *Missouri Dental Journal* (date not given):—Professor Andrews, of Chicago, in a laborious statistical inquiry, embracing 209,893 cases of administration of anæsthetics, gives the following as the relative proportion of deaths:

Sulphuric ether	1 death in 23,204 cases.
Chloroform	„ „ 2,723 „
Chloroform and ether, mixed . .	„ „ 5,588 „
Bichloride of methylene	„ „ 7,000 „
Nitrous oxide	„ „ 75,000 „

Action of Medicines on the Vessels of the Brain.—This has been the subject of investigation by Schüler. He removed from rabbits, with a trephine, a portion of the upper part of the parietal bone, without injuring the dura mater. He was thus enabled to see the vessels of the pia mater. Small sinapisms produced hardly any effect, but large ones caused at first dilatation and then contraction. Schüller explains this by supposing that irritation of the sensory cutaneous nerves produces, by refl exaction, partial paralysis of the vaso-motors, and that later on the influence of the peripheral congestion predominates. Nitrite of amyl causes evident dilatation, both of arteries and of veins. Ergotin produces strong and long-continued contraction. The contractions produced by the latter drug were sufficiently powerful to overcome the dilatations caused by the nitrite of amyl. Opium produces first dilatation and then contraction. Chloroform inhalation produces at first contraction and then relaxation, with well-marked venous stasis, a condition which was quickly relieved by nitrite of amyl. In cases of advanced narcotism from chloroform, nitrite of amyl was found to rapidly relieve the dyspnœa and laboured respiration, to renew the strength of the pulse, and to restore the reflex excitability.—*Berliner Klinische Wochenschrift*, Nos. 25 and 26, 1874.

Antidote to Carbolic Acid.—Hussemann has ascertained experimentally that alkalis and alkaline earths are the best antidotes to carbolic acid. He prefers a saccharate of lime, which he prepares by dissolving sixteen parts of sugar in forty of water, and adding five parts of caustic lime. The mixture is digested for a few days, and then filtered and evaporated to dryness. It is readily soluble in water.—*Der Praktische Artz*, Jahrg. xv, No. 9.

THE VETERINARIAN, DECEMBER 1, 1875.

Ne quid falsi dicere audeat, ne quid veri non audeat.—CICERO.

PREVENTION OF FOOT-AND-MOUTH DISEASE.

To judge from the decided tone of the propositions which are advanced by various Chambers of Agriculture, the prevention of the spread of foot-and-mouth disease, and its ultimate eradication from this kingdom, are mere necessary results of a certain course of action, which in itself presents no serious difficulties to a Government favorably disposed towards the farming interest. In effect all the suggestions which have been made resolve themselves into slaughter or quarantine of all foreign animals at the places of landing, and severe (temporary) restrictions on the home trade—Irish stock to be dealt with as foreign animals—while the country is infected with foot-and-mouth disease.

The only objection which can be urged against this scheme is its utter impracticability. We should be very glad to see the last of foot-and-mouth disease, if for no better reason, at least on account of the entire lack of pathological interest connected with the subject; but we feel bound to protest against the purely visionary plans for its extinction which emanate from those who have but little knowledge of the whole question in all its relations. Mr. Ruskin remarks, in one of his essays on political economy, that it has taken him ten years to get one idea half way into the public's head. We have, therefore, no right to complain if in the same time we fail to get another idea, on a less popular subject, any appreciable distance into the public's head; but we shall, nevertheless, persist in pointing out the inconsistency of quarantine as a means of preventing the spread of an infectious or contagious disease.

A quarantine station must, especially as regards foot-and-mouth disease, immediately become a great centre of infection; in fact, no more effectual method of perpetuating the

disease could be devised. Quarantine stations on a small scale, to be used now and then for a few valuable animals which are imported under special precautions, answer very well—have succeeded, in fact, at Southampton ; but when it is proposed to deal with thousands of animals instead of units outbursts of disease are quite inevitable, and then the plan necessarily defeats its own object by tending to the spread of the maladies which it is meant to arrest.

Slaughter of imported fat stock, foreign and Irish, cannot be objected to on sanitary grounds ; but a difficulty, which is hardly surmountable, stands in the way of its adoption. Excepting the port of London there is no port on the coast where the necessary arrangements exist or could be made for the slaughter at the place of landing of all the animals which are landed. Take Hull, in reference to foreign, and Liverpool in reference to Irish stock: will the proposers of the measure undertake to point out any portion of the landing-places, at either port, where the required lairs and slaughter-houses could be erected? Of course there is the alternative plan of diverting the trade to parts of the coast where proper accommodation can be made; but what power short of an Act of Parliament would be equal to effect such a radical change in the long-established system of cattle trading? Were it possible to carry into effect the suggestion as to quarantine or slaughter of imported stock, the measure would not be satisfactory to any section of the community. The manufacturing districts would urgently oppose the scheme, and agriculturists would not be content with it ; indeed, they have already indicated that their views are in advance of this proposition, by suggesting that nothing less than the prohibition of imports of live animals from abroad, and the introduction of dead meat instead, will protect the country from imported disease.

If the extinction of the foot-and-mouth disease is to be deferred until this suggestion be adopted, it is to be feared that the malady may be regarded as a permanent institution.

TAXING VETERINARY SURGEONS' FEES.

Mr. William Field, Jun., in his letter, which we publish in another part of the Journal, calls attention to a point which is of considerable interest to the veterinary profession, every member of which is liable to be called upon to devote his time for days together at a Court for the absurdly inadequate consideration of a guinea per day. Witnesses on the winning side may be lucky enough to obtain the fees which they demand; but the loser only pays his witnesses what the taxing-master allows.

It appears, as Mr. Field is advised, that we have a right to the higher fees, if we choose to insist on the demand; but the difficulty still remains as to the means of enforcing the claim; we fear that a busy man would rather put up with reduced fees than incur a further loss of time in the attempt to establish his claim. It is something, however, to know that the law is on our side.

Extracts from British and Foreign Journals.

THE PHYSIOLOGY OF VOMITING AND THE ACTION OF EMETICS.

Dr. Lauder Brunton sums up an extremely interesting paper on this subject, as follows:—1. Vomiting consists of two factors, viz. (1.) The simultaneous compression of the stomach by the abdominal muscles and diaphragm, and (2) the opening of the cardiac orifice by the contraction of the longitudinal fibres of the œsophagus. 2. When innervation is disturbed, these two factors do not occur together, and thus retching may occur without vomiting. 3. The movements of vomiting are correlated by a nervous centre in the medulla oblongata, from which impulses are sent down through various motor nerves to the muscular structures engaged in the act. 4. This nervous centre is probably closely connected with the respiratory centre, but is not identical with it. 5. It is usually set in action reflexly by

irritation of the pharyngeal, gastric, hepatic, enteric, renal, uterine, ovarian, and possibly also by the pulmonary and vesical nerves, which come from the periphery towards it. It may also be excited by impressions sent down to it from the brain. 6. Vomiting may be arrested in two ways, either by removing the irritant which is exciting the vomiting centre, or by lessening the excitability itself, so that the centre no longer responds to the impressions made on it from without. 7. Emetics may be divided into two classes: those which act only on the stomach, and those which act on the vomiting centre also. 8. Tartar emetic probably acts in both ways. Tolerance of it is probably due to want of hydrochloric acid in the stomach. 9. Emetics may be used to evacuate the stomach and duodenum. They thus remove irritating matter, poison generated in the stomach by putrefaction, bile, and metals, or fever poisons circulating in the entero-hepatic circulation. 10. They may be also used to empty the bronchi and gall-bladder, or to cut short epileptic, and to prevent ague fits.—*Practitioner.*

In the *Archives Générales de Médecine* for June, in an analysis of M. Grasset's thesis on emetic medication, emetics may be divided into three classes, according to their mode of action:—1. Peripheric emetics, which act by exciting the extremities of the pneumogastrics, and of which ipecacuanha is an example. 2. Central emetics, which act by exciting the vomitive centre in the medulla oblongata, and of which apomorphia is an illustration. 3. Mixed emetics, which act by simultaneously exciting the peripheric extremities of the pneumogastrics and the vomitive centre, such as tartar emetic. Emetics, besides inducing sickness, generally have a local irritant effect on the skin and mucous membrane; they modify the respiration, circulation, and temperature; they increase the secretions, and they diminish the excitability of the striated muscles.

INFLUENCE OF COMPRESSED AIR ON FERMENTATION.

By M. Bert.*

The author has investigated the effects of compressed air upon fermentation, and has come to the conclusion that putrefaction and the oxidation which accompanies it are retarded or arrested in proportion to the atmospheric pressure to

* *Journal de Pharmacie et de Chimie* for September.

which the substance is subjected. In support of this proposition he cites the following experiment:

A piece of muscle (95 grams) was submitted, from the 29th of July to the 3rd of August, to a tension of oxygen corresponding to twenty-three atmospheres of air. At the end of that time it had no odour, and had only consumed 380 cubic centimètres of oxygen. A similar piece suspended at the top of a bell glass full of air, at the normal pressure, gave off a tainted odour and had consumed all the oxygen in the glass, equal to 1185 cubic centimètres. By increasing the pressure the oxidation was stopped completely. The meat so submitted to compressed air preserved its appearance, firmness, and histological structure. Only the cut edge became of an amber-yellow colour. It was possible to eat cutlets of mutton that had been thus preserved during a month.

M. Bert concludes from these facts that oxygen, under a sufficient tension, kills the vibrios capable of engendering putrefaction, without causing the meat to lose its putrescibility.

The alteration of eggs, urine, milk, wine, wet bread, strawberries, cherries, etc., is arrested by compressed air, these substances remaining perfectly sound. Meat and eggs acquire a clearly acid reaction which appears to be due to lactic acid.

Saliva, pancreatic sugar, vegetable diastaste, pepsin, myrosin, emulsin, and the inversive ferment of beer yeast, continue to act during compression, and after removal from compressed air retain all their power. Indeed, if the vessels containing them be then closed they will remain without alteration during an unlimited time. The compressed air appears to kill the moulds and thus to protect the soluble ferment.

CROTON-CHLORAL HYDRATE.

In the *Berliner Klin. Wochenschrift*, No. 21, 1875, is an important paper by Dr. von Mering on the Physiological and Therapeutic Action of Croton-Chloral Hydrate. Liebreich's theory as to the Action of this substance in the living body is, that it is decomposed by the alkaline blood into dichlorallylene, thus: $C_4H_3Cl_3O + KHO = C_3H_2Cl_2 + KCl + H_2CO_2$. Dr. Mering, however, finds that trichlorocrotinic acid, which also decomposes into dichlorallylene, is positively inert; and,

moreover, he failed to find any trace of dichlorallylene in the urine of patients who had taken large doses of croton-chloral hydrate. He found that under the influence of this drug the frequency of the respiration in rabbits steadily diminishes until the animal dies. Other experiments proved that under the influence of small doses the blood-pressure was temporarily diminished, while it was reduced almost to zero by large doses, consequent on paralysis of the muscular coat of the arteries, and on weakening of the heart's action. Croton-chloral hydrate at first increases the frequency of the pulse, but subsequently reduces it below the normal standard. It affects different animals differently. Thus, it exerts a powerful influence on cats, while it affects dogs in a very slight degree. Dr. Mering has found the employment of croton-chloral hydrate in the treatment of facial neuralgia and sciatica, &c., very unsatisfactory. His patients were not at all relieved by 0·8 gramme four times daily, while morphia at once relieved them. It proved in his hands equally unsatisfactory as a hypnotic. He believes that in cases of heart disease it is preferable to chloral, as being less likely to depress the circulation; and here again he differs essentially from Liebreich, who insists on the utmost caution in the use of this drug in heart disease. The *Medical Times and Gazette*, 12th June, in alluding to those researches of Mering, also draws attention to the very recent work of Dr. A. Weill, a French physician, who arrives at almost opposite conclusions. In his experiments he has never observed any important modifications in the functions of respiration and circulation by croton-chloral hydrate. In large doses, however, it kills by arresting the circulation. He is in accord with Liebreich in believing that its primary action is on the sensory cranial nerves, that it secondarily affects the spinal sensory nerves, and that the motor branches are but slightly if at all affected. He believes that there is a close resemblance physiologically between croton-chloral and chloral, but he considers the former to be the more powerful hypnotic. He recommends it in neuralgias, in spasmodic nervous affections, to allay cough in chronic lung disease, &c. He gives it in doses of $\frac{1}{2}$ to $1\frac{1}{2}$ grain at first, and he administers it with extract of liquorice to conceal its nauseous taste.

IRISH CATTLE TRADE.

The stringent regulations laid down by the Privy Council and enforced by the Local Authorities with respect to the importation of cattle, have created a ferment in the Irish trade. Alarm is expressed at the prospect of having the export stopped, and it is alleged that the precautions put in force are unnecessary, as foot-and-mouth disease prevails to a comparatively small extent in Irish stock. A meeting of landowners and others interested was held at Dublin, under the presidency of Mr. Hans Hamilton Woods, D.L. Mr. Dickinson explained the circumstances under which the meeting had been convened, and said that the act of the authorities at Silloth, which was the immediate cause of the meeting, would be a very great injustice to him. The cattle in question shipped on Thursday, the 11th ult., for Newcastle, but when they landed at Silloth it was found that one of the animals belonging to a person named Harding was slightly affected with disease. The inspector refused to let the cattle pass, and the authorities gave the option of re-shipping them or letting them stay in quarantine. He was aware that the cattle had passed through the disease, and he refused to let them be re-shipped. The station master at Carlisle admitted that it was a hard case, but said there was no redress, as the local authorities were empowered to act as they had done. They treated Irish cattle as they did foreign cattle, forgetting that Ireland was part of the United Kingdom. The inspectors at Silloth seemed to think that all the disease came from Ireland; but that was not so, for during the spring the Scotch cattle were seriously affected by it, while there was no disease among the Irish animals. He believed that the disease could not be eradicated, and that the clause under which the restrictions were imposed should be struck out altogether.

Mr. M'Quade stated that the head of the veterinary department in London admitted that the restrictions would seriously affect the Irish cattle trade, but recommended the erection of a shed for slaughtering, which would not cost more than £10. The secretary of the department informed him that the local authorities could make their own regulations.

Mr. Richard Welsh proposed a resolution to the effect that an association should be formed for the protection of the trade.

Mr. Garnett, J.P., said he had been for fifty years connected with the cattle trade, and had watched it closely since 1844, when the disease first appeared in the country, and there was not a medical man who had taken up the subject who knew more about it now than in 1844. This disease was as severe then as ever it was, and yet there were no restrictions, and no one had suffered from it. The cattle trade, he observed, was the chief trade of Ireland, and they had a right to ask the Privy Council who the parties were who had advised them to impose such restrictions. The veterinary surgeons were determined to poison the minds of the public about this disease in order to keep up their own office. He believed that Irish cattle were as healthy as any in the kingdom, and protested against their having a character given to them which they did not deserve.

Mr. George Woods Maunsell, D.L., observed that the cattle trade of the country, which represented an aggregate of between forty and fifty millions, had suddenly been brought to a standstill by the action of some persons at Silloth, whether competent or incompetent he did not know. It all arose from the theory that the same remedies should be applied to Ireland as to foreign countries, though any child could see the difference between them. The effect was that the cattle trade might be looked upon as in a state of collapse. Any man might send carefully selected stock across the Channel; but if any animal had picked up a stone and got a raw in his hoof, which an incompetent inspector might think to be the disease, the whole cargo was condemned, and the cattle were sold without any regard to the owners, or shippers, or to the English consumers. One effect of the restrictions would be to raise the price of beef in England. If cattle got a clean bill of health in Dublin and were then treated as foreign cattle it would be laying down a law which would drive the whole country into open rebellion. At Ballinasloe 12,000 head of cattle changed hands, and probably on the journey disease appeared in half the number, but he asked, had any one suffered from it? What would have been the result, however, if the fair had been stopped?

A committee was appointed to organise the proposed association.—*Times.*

CONTAGIOUS DISEASES AMONGST CATTLE.

MEETING OF THE NORFOLK CENTRAL COMMITTEE.

THE adjourned meeting of the Central Committee appointed by the Local Authority for Norfolk for the purpose of carrying out the Contagious Diseases (Animals) Act, 1869, was held on Saturday, November 6th, at the Shirehall, Norwich, Major Penrice presiding.

APPOINTMENT OF ADDITIONAL INSPECTORS.

The Chairman stated that the subcommittee, in accordance with the instructions given at the last meeting, had subdivided three large districts and appointed three additional inspectors. The great difficulty the committee had to contend with was the fact that most of the qualified veterinary surgeons resided in towns. The gentlemen appointed by the subcommittee were:—Mr. Buckingham, of Harleston; Mr. Rattee, of Hapton; and Mr. Margetson, of Stoke Ferry. These gentlemen had accepted the office, and their appointment was confirmed.

Several members suggested other alterations which might be made, and the *Chairman* promised that the subcommittee would take such suggestions into consideration, and, if they saw no objection, would adopt them.

REPRESSION OF DISEASE.

Mr. Gillett said he had been requested by Mr. Broom, to whom the committee was indebted for the trouble he had taken in this matter, to propose a resolution, and he had the greatest pleasure in complying with that request. The time had, he thought, come when the country generally, and especially such a large grazing county as Norfolk, ought to adopt stringent measures for the repression of the foot-and-mouth disease. Up to the present time all the efforts that had been made to secure this end had been almost worse than useless. Under the Orders in Council many persons had been fined heavily for not giving notice of disease to the police; but in many cases the parties were ignorant that they were doing wrong, for men who were employed to keep stock could scarcely be supposed to know the requirements of the Orders in Council. Such measures as these he stigmatised as useless to prevent the spread of disease, but if the resolution he had to propose was adopted he had no doubt the whole country would benefit. By preventing their flocks and herds being devastated by disease the producers would benefit by not having to suffer such heavy losses, and the consumers would also benefit, for meat would be reduced in price. (Hear,

hear.) With these few words he begged to move the following resolutions :—

"That in view of the universal existence of foot-and-mouth disease this Committee is of opinion it is necessary to close all fairs and markets throughout the United Kingdom for six weeks, save those markets for the sale of fat stock only to be immediately slaughtered, first giving the country a month's notice.

"That this would check the disease, and allow time for all markets, fairs, cattle trucks, steamboats, and infected premises to become cleansed and disinfected.

"That one uniform and compulsory law as to the movement of cattle affected with disease, or of animals in contact with such, should be in operation throughout the United Kingdom.

"That such laws be vigorously enforced and have every publicity.

"The Committee believes by these means the foot-and-mouth disease (which is now causing an immense loss of meat and dairy produce) might be suppressed.

"That all foreign cattle be slaughtered at the water side, or sufficiently quarantined."

Mr. R. Kidman seconded the motion. He said this disease first made its appearance in this county in 1839, and had been steadily increasing since, never having been checked only when the markets and fairs were closed. At the present time the disease was more severe than it had ever been before; and only in his small way he had lost from £300 to £400 a year by it, and he knew many others who had suffered in the same way. (Hear, hear.) This matter was brought before the Board of Guardians of which he was a member, and a motion was carried unanimously in favour of restrictions such as those now proposed to be carried out.

Mr. J. Broom said that before they could hope to check the disease at all it was necessary that all fairs and markets should be closed. (Hear, hear.) The only objection made to the motion when brought before the Board of Guardians was that it might prove injurious to the public-houses and other places in the neighbourhood of markets; but in his opinion the benefit such places would derive from the markets being cleaned would more than compensate for any temporary loss they might sustain from their being closed. He trusted the committee would support the motion. (Hear, hear.)

Mr. R. England said he was strongly of opinion that it would be useless to put further restrictions on the farmers as to the removal of cattle from field to field, or farm to farm, unless measures were taken to prevent the introduction of disease into the country. (Hear, hear.) Unless foreign animals were

slaughtered at the water side they would probably disseminate disease throughout the country from every market and fair to which they were taken. If the proposed measures received the sanction of the Privy Council, and became general throughout the country, there could be no doubt they would have a very great and immediate effect in checking the spread of disease; but it would be useless to sanction such stringent measures unless the country was prepared to adopt them. Unless means were taken to prevent the fresh importation of disease he was opposed to placing any further restrictions on the farmers. To do so would cause the farmer a great deal of vexation and annoyance, and do no good. (Hear, hear.)

Mr. C. S. Read, M.P., said this resolution was a very strong one—stronger than any passed during the cattle plague; and he suggested that markets should be kept open for the sale of fat stock for slaughter. It was impossible that London could be fed if they stopped the supply of all fat cattle. Even during the time of the cattle plague many markets were kept open for the sale of fat cattle, which were immediately slaughtered, or at all events never left the town in which the market was held alive.

Mr. Gillett here intimated his willingness to accede to the suggestion, and a clause to that effect was inserted in the resolution.

Mr. Read continued—He quite agreed with Mr. England that if they were going to put such harsh restrictions upon themselves they must insist upon disease being kept out of the country. Now we had become so used to the disease that there was a growing feeling amongst a certain class of people to the effect that this was not a contagious disease at all. Such people fancied that if cattle were exposed to hardship, were over-driven, or over-crowded in the hold of a ship, they would become subject to pleuro-pneumonia or foot-and-mouth disease, whether or not the virus of the disease lurks in the hold of the vessel or in the cattle-trucks. If they allowed such a sentiment or idea to go forth without entering a strong protest against it he feared they would be doing harm to themselves and the country. (Hear, hear.) He was speaking to a number of practical farmers, many of whom had had sad experience of this disease, and he would ask them whether—although they might not be able to account for the spread of the disease—they ever knew a case of the disease breaking out spontaneously? (Hear, hear.) Take the cattle plague—did that break out spontaneously? No. It was brought direct on to Norwich Hill, and from thence spread all over the country. (Hear, hear.) Before making any further remarks he would ask the Chairman whether, as a committee, they had power to memorialise the Privy Council or the Prime Minister.

The Chairman said he had spoken on that matter to the Clerk of the Peace, who was of opinion that the committee, being merely delegates of the local authority, they had not such power, but the proper course to take would be to ask the Local Authority —the Quarter Sessions—to send up a memorial.

Mr. Read said he apprehended that when the committee was appointed, the local authority delegated to them all its powers and privileges, excepting only the power of levying a rate. If that was so, he contended that it was one of their privileges to approach the authorities in London. However, if the resolution was passed, he supposed they would have to ask the Quarter Sessions to forward it to the Prime Minister or Privy Council.

The Chairman replied in the affirmative, and said that was the course taken by the committee a year ago.

Mr. Read continued—If they again memorialised the Privy Council he hoped they would not be subjected to similar treatment. (Hear, hear.) The Central Chamber of Agriculture had become tired of the Privy Council, and in his opinion the county of Norfolk had also good reason to be tired of going to that body. (Hear, hear.) The other day the Central Chamber resolved to send a deputation to wait upon the Prime Minister, and he submitted that if this resolution were passed they should ask the Quarter Sessions to send it up to the Premier rather than to the Privy Council. (Hear, hear.) He should like to explain how the county of Norfolk had been treated by the Privy Council with regard to the resolutions they sent up to that body. It was mentioned in the report of the subcommittee to the Quarter Sessions, but it had never been publicly ventilated, so that a great number of gentlemen did not know to what insults the farmers of Norfolk had been subjected by the Privy Council of Dublin. On two separate occasions the Quarter Sessions for Norfolk protested against the Orders in Council now in force, contending that they ought not to be compelled to slaughter cattle affected with pleuro-pneumonia whilst the same Order did not extend to Ireland. Upon receiving that protest, the Privy Council sent it over to Dublin, and the authorities of the Veterinary Department there sent over to Norfolk a most excellent, respectable, and clever veterinary surgeon—Mr. Chambers. That gentleman called upon him, but he told him he did not wish to say a word to him. He, however, told him that he had instructed Mr. Gilman to give him all the information he required, and that the inspectors would also show him their books. Mr. Chambers apparently went round and saw most of the inspectors, and examined their books and accounts. He then made to the Privy Council at Dublin a mild and fair report, in which he came to the conclusion that no doubt there had been an enormous outbreak

of pleuro-pneumonia among cattle recently imported from Ireland, and either this disease must be said to have originated spontaneously—which nobody ever believed except Professor Ferguson—or there were more affected herds in Ireland than were reported to the Veterinary Department. Now, continued Mr. Read, he should like to ask whether the latter was not extremely probable. If they in Norfolk were to have their cattle seized, killed, and buried without being allowed a single sixpence of compensation—which was the case in Ireland—was it likely they would go and publish it to the world that they had got pleuro-pneumonia amongst their stock? Of course they would not. Until compensation was granted they would never know half the pleuro-pneumonia that existed in Ireland. Well, this report of Mr. Chambers was asked for in the House of Commons by Mr. Barclay, but the Privy Council at Dublin refused to give it unless supplemented by a report by Professor Ferguson upon the report of Mr. Chambers. Professor Ferguson, having no case to make out against Norfolk, began to abuse them, and to contend that the whole of the loss of cattle here was not due to importation, but that one fruitful source of the spread of the disease was the manner in which the farmers of Norfolk kept their stock. He said, in effect, that they put their cattle into boxes and yards in the winter, and they stand there upon manure, which is the cause of their having the disease. (Laughter.) Why, how were stock managed in Ireland? They had to winter in the open; and all through the cold weather were exposed to rain, wind, and cold, and had to lie on the wet ground. Was not that sort of treatment more likely to give cattle pleuro-pneumonia than putting them into a well-littered yard or box, where they were sheltered from the elements and kept warm and dry? (Hear, hear.) This was what Professor Ferguson said, and though he was sorry to detain the meeting, he should like to read to them the conclusion of the professor's report. It was as follows:—

"As well might human beings imprisoned for months together in cesspits or cesspools, or in reservoirs for the accumulation of their fæcal, urinal, and other secretions, standing or lying continuously on such accumulation of their own excrements, constantly inhaling the pestilential emanations from their own ordure, fresh as well as stale, or in a state of fermentation or decomposition, be expected to continue, or be in such a vigorous state of health as not alone to resist diseases, but also to increase in healthiness and flesh, as that it could reasonably be expected that cattle, treated as they are in Norfolk, no matter from whence they come, could invariably remain in a sound or healthy state; not even the proverbial hardness of Irish cattle can always suc-

cessfully resist such a disease-engendering or exciting influences. [It required an Irishman to read that sentence—it was so long.] (Laughter.) It is much to be regretted that legislation, based upon the recognised principles of sanitary science, has not yet, in the interest of the public welfare, extended to food-producing, domesticated animals the same degree of sanitary protection as is already enjoyed by the human population of Great Britain; and I have the honour to most respectfully submit that until such is the case, it would be unreasonable to hope or trust that the occurrence of pleuro-pneumonia in Great Britain, particularly in the county of Norfolk, will be diminished to an extreme minimum."

Mr. Read continued—He would ask was that a fair description of the loose boxes and yards of the county of Norfolk, and whether, when the yards or boxes were freely littered, they might not take the most sensitive chemical paper and yet fail to detect the slightest trace of any escape of noxious gas; and whether the only smell they could detect when they went into the boxes of a morning, was not that of the sweat and breath of the animals? (Hear, hear.) He hoped they should not be treated in this way again. He protested against this report, which was ignorant, nay more, was insolent, and further it was nothing more nor less than a libel upon the farmers of Norfolk, and the way they treated their stock. (Hear, hear.) Moreover, there was in the report a cock-and-bull story to the effect that when they made manure, it was called "bullock pudding." Did they ever hear of such a name? No. Many of them would, perhaps, remember the late Mr. Warnes, of Trimingham, who used to say when animals were introduced into the boxes the only way to fatten them was by giving them linseed pudding. From this expression of Mr. Warnes' he supposed they got this story. He was tired and ashamed of exposing this remarkable correspondence, and, therefore, he said they had better go to the fountain-head rather than run the risk of again having such inuendoes cast upon the management of stock in Norfolk. It was not when the bullocks were in boxes that they got pleuro-pneumonia. The disease broke out in the autumn, when they bought their grazing stock, or in the summer, when they were sent on to the marshes and had a chance of communicating the disease to one another. Before he sat down he wished to call attention to Professor Fergusson's latest document, in which he said, "When foot-and-mouth disease breaks out in Ireland amongst cattle that are nearly fit for the butcher, the best way to do is to send those that are not diseased into the nearest market." (Laughter.) Was not that an explanation as to how it was that such cattle came to Norfolk? (Hear, hear.) If that was the doctrine held in Ireland, was it

not high time that Norfolk—the greatest grazing county in England—should protest against this abuse, and say—The same rules and regulations, be they strict or lenient, shall be applied to Ireland as well as to Great Britain. (Applause.)

Mr. R. T. Gurdon said it was necessary that all representations intended to be made to the Government should be forwarded through the Quarter Sessions; and an opportunity for bringing the matter before the Court would be afforded on Thursday week, to which day the Court stood adjourned. He was opposed to going to the Privy Council; because if they did so they might very likely be "snubbed" again. They would be sure to have more courteous if not more satisfactory treatment from the Prime Minister; therefore he agreed with Mr. Read that the resolution should be forwarded to him.

Mr. Reeve said that though he did not buy cattle at markets or fairs, he yet got the disease amongst his herd; but that was owing to infected cattle being driven past his farm.

The Chairman suggested that they would materially strengthen their hands in whatever course they took if they obtained the co-operation of the local authorities in other counties.

Mr. Gurdon and *Mr. Hyde* both stated that they had seen in the papers reports of meetings of several other Quarter Sessions, which had resolved to take the same course as was now proposed to be taken by that meeting.

Mr. W. L. Jex Blake said this was a most important matter. If all markets and fairs were closed that step would entail an enormous loss on people who got their living by buying and selling stock. What good would such a proposal effect? At the time of the cattle plague they closed the markets for six weeks, and for a few months, perhaps half a year, the country was free from disease; but now there was more disease than ever. If they were to stop the markets now, he had not the slightest doubt that in half a year afterwards the disease would again make its appearance. (No, no.) That was his opinion. He never had a head of stock upon his farm except what he bought as calves. He reared all his stock from calves. The fact was the disease was in the air, and he would not believe anything else. As to giving notice of disease to the police, he should like to know what good that was. They simply saw in the papers how much disease there was in the county. He was opposed to all restrictions—let the disease have a free course.

Mr. Read could not allow such a statement to go forth without contradiction. Mr. Blake said the closing of the markets had been tried and failed, but he maintained that it had been wonderfully successful. They did stamp out the cattle plague, very nearly succeeded in stamping out pleuro-pneumonia, and for

eighteen months there was no foot-and-mouth disease in Norfolk. To effectually stamp out the disease they must not only close the markets, but must stop foreign cattle from re-introducing it. (Hear, hear.)

The Chairman remarked that he quite agreed with Mr. Read that it was no use stopping the markets unless they also stopped the fresh importation of disease.

The motion was then put and carried with only three dissentients. It was also agreed, on the motion of *Mr. Read*, that the resolution should be printed, and a copy sent to the other Local Authorities throughout Great Britain, with a request to join the county of Norfolk in their endeavour to get some satisfactory settlement of this very vexed question.

The meeting then broke up.—*Norwich Mercury.*

MEETING OF COUNTY MAGISTRATES.

An adjourned meeting of the magistrates of Norfolk was held on Thursday, Nov. 18th, at the Shirehall, Norwich, to receive a memorial from the Central Committee under the Contagious Diseases (Animals) Act. Sir W. Jones, Bart., presided, and there was a full attendance.

CONTAGIOUS DISEASES AMONGST CATTLE.

Major Penrice brought up a resolution from the Central Committee, which they requested the Court to adopt, and to forward the same, in the form of a memorial, to the Privy Council. The resolution was as follows:

"That in view of the universal existence of foot-and-mouth disease, this committee is of opinion it is necessary to close all fairs and markets throughout the United Kingdom for six weeks, save those markets for the sale of fat stock only to be immediately slaughtered, first giving the country a month's notice.

"That this would check the disease, and allow time for all markets, fairs, cattle trucks, steamboats, and infected premises to become cleansed and disinfected.

"That one uniform and compulsory law as to the movement of cattle affected with disease, or of animals in contact with such, should be in operation throughout the United Kingdom.

"That such laws be vigorously enforced and have every publicity.

"The committee believe by these means the foot-and-mouth disease (which is now causing an immense loss of meat and dairy produce) might be suppressed.

"That all foreign cattle be slaughtered at the water side, or sufficiently quarantined."

It was felt by the committee, said Major Penrice, that they had received on former occasions scant courtesy from the Privy Council, who, in reply to their request that the pleuro-pneumonia rules should be extended to Ireland, sent them what looked like a parcel of excuses for doing nothing. The "facts" with regard to Norfolk were simply not true. As a sample, it was said that animals were indebted, if not for the existence, at least for the propagation of pleuro-pneumonia to the beastly dirty way in which they are kept throughout the winter in Norfolk. What was the fact? Supposing their stock was kept in the way alleged, he, as Chairman of the committee, and having attended to this business for a great many years, would simply say it was untrue that pleuro-pneumonia makes its ravages in the winter. On the contrary, it was late in the summer—August or September—that the animals were attacked. When they were snugly ensconced in the yards, well littered down, there was a decrease instead of an increase of the disease. (Hear, hear.) It was Mr. Reed's idea that it would be better to go to the Prime Minister in this matter, as the Central Chamber intended sending a deputation to Mr. Disraeli. But as the Prime Minister had refused to listen to the representatives of the Central Chamber of Agriculture, and had sent them to the Privy Council again, he supposed they could do nothing else except send a memorial to the Privy Council. He himself was of opinion that it would have been well to communicate with the authorities in other counties, so as to bring a united action to bear upon the Privy Council to induce them to do something. He concluded by moving the adoption of the resolution, and that it be signed by the Chairman, and forwarded by the Court to the Privy Council.

Mr. C. S. Read, M.P., seconded the motion.

The *Earl of Kimberley* said he felt greatly interested in this matter, and he could not remain silent, especially after listening to the hon. magistrate's remarks as to the reply made by the Irish Privy Council with regard to the keeping of cattle in Norfolk. That statement originated, he believed, with the well-known veterinary surgeon—Professor Ferguson, of Dublin. He must say that in common with many other magistrates he read the report in the newspaper with unfeigned astonishment. How any person could possibly place on record anything so extraordinary as a statement that pleuro-pneumonia was caused by the beastly manner in which cattle were kept in Norfolk, and that such a statement as that could come from Ireland, passed almost all the experience he had had of Irish affairs on any subject. (Hear, hear.) The thing was so palpably absurd—that was not too strong a term to use—that he was ashamed to see such a report put about the country as coming from a responsible officer. He

did not care if his remarks reached Mr. Ferguson. He had a great respect for Mr. Ferguson. When the cattle plague threatened Ireland, and when he (the noble earl) was principally responsible for doing what was possible, and what was eventually done successfully in keeping it out of the country, Professor Ferguson was his right hand in the whole of that business. He was entirely dependent upon the Professor, and he thought that the Government was greatly indebted to him for his intelligence and exertions. It was for that reason that he so deeply regretted that the Professor should have put his name—if he had done so—to a statement which had not been sufficiently considered, and which was not at all consonant with the reputation he bore among those who knew him. The whole question of the non-application of the rules as to pleuro-pneumonia to Irish cattle was one which he should be sorry now to descant upon, as it had been so much discussed. He had ventured more than once to express an opinion upon it; but anything more anomalous and absurd than that we should have these strict regulations in England with regard to pleuro-pneumonia, and that we should import cattle continually from a country like Ireland, where there were no such regulations, could not be conceived. (Hear, hear.) He made a statement on the subject in Parliament, and he challenged any one to say whether there was any possible answer to the argument which he believed he originated, and which he had observed had since been made use of by many others, but, of course, no one ventured to make any kind of reply. He had in private conversation asked his friends who were acquainted with the Irish Government what was the true cause of the anomaly, and the only answer he could get—and he believed it to be the true difficulty—was that they had not a sufficient number of veterinary surgeons in Ireland qualified to enforce these rules. He thought it discreditable that in some way or other Government should not get over that difficulty. He was not prepared to make a suggestion as to the way it was to be done. But the matter was not one to be pooh-poohed. It was an extremely serious one. The very high price of meat could not be agreeable to the consumers, and there could be no doubt that those high prices were not entirely owing to the producers of meat reaping a rich harvest. It was partly owing to the heavy losses, which had to be covered by increased prices. (Hear, hear.) This increased price was a large, continual, and important loss to the country, touching not merely the farmers, but all consumers. This was a question for the whole population, and was a question of very serious importance. He brought not the slightest accusation against the Privy Council as at present constituted, or against the Government. The same difficulty was experienced in dealing with the question when he was in the

Government; but he thought he might say that in season and out of season any person who knew anything of this subject should lose no opportunity of denouncing the present anomalous arrangement, and pressing upon the Government of the day the duty of doing something to remedy the evils of which they most justly complained. (Hear, hear.)

Major Penrice suggested that in return for the importation of diseased animals from Ireland this county should send over a few inspectors, of which there were plenty to spare. (Hear, hear.)

Sir R. J. Buxton, M.P., said it was important that, in the interests of this the greatest agricultural county in England and the public generally, some definite action should be taken. He would not express any opinion upon the proposal to close Norwich market.

Mr. W. L. Jex-Blake said that he opposed the resolution in committee, and he would do so now. He contended that, even if the markets were closed, it would be found next November that there was just as much disease in the county as at the present time.

Mr. R. T. Gurdon pointed out that the closing of the markets was but a small part of the matter, and that by far the most important was that which related to the application of the same rules and regulations to Ireland as were now enforced in this country. (Hear, hear.) The Norfolk Chamber of Agriculture had agreed to forward similar resolutions to the Privy Council, and he hoped that the Court would unanimously support the recommendations of the committee to whom it had delegated the consideration of these subjects. (Hear, hear.)

Colonel Fitz-Roy said that although he did not agree with the majority of the committee, but voted against the resolution, he should not offer any opposition on the present occasion. (Hear, hear.)

Mr. C. S. Read, M.P., after observing that the numbers of the committee were nineteen for the resolutions and three against, said that if, as Mr. Jex-Blake appeared to think, by closing the markets now for six weeks they would get rid of this disease for twelve months, the advantage to be gained was exceedingly great. (Hear, hear.) But Mr. Jex-Blake held the belief that this disease was not contagious or infectious, but that it was in the air. (Laughter). If Mr. Jex-Blake were right, instead of adopting these resolutions, they ought to memorialise for the withdrawal of all the harassing restrictions now in force, and which were no doubt obnoxious to graziers and dealers. (Hear, hear.) He was of opinion that, as at present constituted, they did no sort of good whatsoever. (Hear, hear.) What was wanted was some general

systematic uniform law for the whole United Kingdom, for in doing what they do now they were simply throwing money into the fire; or better still, they should let the whole thing alone, and then see what would happen. (Hear, hear.) The reason why he suggested to the Central Committee that they should go to the Prime Minister was that, as the Central Chamber was going to send a deputation, the county of Norfolk should join in the movement. The Prime Minister had, however, told the Central Chamber to go to the Privy Council. His own opinion was that this was a national question, and that they were therefore justified in going to the fountain head—(hear, hear)—but, under the circumstances, they had better submit the resolutions to the Privy Council.

The motion was then carried, and the meeting broke up.—*Norwich Mercury.*

OPENING OF THE NEW VETERINARY COLLEGE, MONTREAL.

The inauguration of this new building took place on October 5th, in connection with the ninth annual inaugural lecture. The building, which is of a three-storey, Mansard-roof, brick construction, is fitted up with all the modern appliances necessary for such an institution, including a dissecting room, a dog infirmary, and other modern improvements. The stabling is after some of the latest plans, being well lighted, thoroughly ventilated, and well drained, giving also plenty of room to the horses.

A large number of prominent gentlemen were present. After viewing the premises, including the museum, which we have almost omitted to mention, where a large number of skeletons and bones of horses and other domestic animals, including a variety of anatomical charts and diagrams, were exhibited, the company repaired to the lecture room, where a most interesting lecture was delivered by Professor McEachran, and which was listened to by the following gentlemen:—The Hon. P. Garneau, Minister of Agriculture, in the chair, Attorney-General Church, J. T. Ross, Rev. F. Pilot, His Worship Mayor Hingston, Dr. J. W. Dawson, A. W. Ogilvie, Thomas White, jun., G. J. Drummond, Esq., James Ferrier, jun., Dr. Scott, Dr. Schmidt, Dr. Bell, Alex. Summerville, Alex. Waddell, M.R.C.V., of Quebec, Dr. Fisher, N. B. Blackwood, J. W. McGauvran, including a number of students from the Medical and Veterinary Colleges. A number of letters of apology had also been received from J.

M. Browning, President of the N. Y. Council of Agriculture; L. H. Massue, Vice-President of the N. Y. Council of Agrigulture; Prof. G. W. Campbell, Dean of the Medical Faculty of McGill University; Prof. Leontard, M.D., V.S., Principal of the American Veterinary College, New York.

Professor McEachren delivered a most interesting lecture. After dwelling some time upon the history of Veterinary Surgery, tracing its progress from the earliest time he went on to say—

GENTLEMEN,—This brings me more particularly to the object of our meeting here to-day, viz., to inaugurate the ninth session of this School and open our new College Buildings. Nearly thirteen years ago, like many others of my countrymen, I was induced to come to this country, and for nearly three years devoted myself to the organisation of what is now known as the Ontario Veterinary College at Toronto, in conjunction with my friend and class-mate, Professor Smith; in 1866, removing to Montreal as a larger field for practice. From my experience in the Western Province I was convinced that I could devote my energies to no more worthy or necessary task than to endeavour to introduce Veterinary Science, and try to raise it from the very lowest depths of empiricism in which I found it. My task, you will admit, was a weighty one, but the more I thought of it the more I became convinced that the elaboration of my project was essential to the country, and that though my humble efforts might be little thought of, yet I was convinced that in time the benefits must come to be felt, especially by the industrial and agricultural population.

With this object in view, I approached the Board of Agriculture, and proposed to give a course of lectures, if they would pay the expenses, in reply to which, on the recommendation of the late Mayor, T. E. Campbell, then President, they agreed to grant me $300 a year, for which I was to teach six pupils.

On explaining my project to Professor Dawson, Principal of McGill University, he at once took a most active interest in the matter, as did also Prof. G. W. Campbell, Dean of the Medical Faculty, the late Prof. Fraser, and other Fellows; and with a liberality worthy of the examples set them by the great luminaries of medical science, Jenner, Hunter, Sir Astley Cooper, Cline, and in my own time Goodsir, Syme, Balfour, Bennett, McClaggan, and others, they not only admitted the pupils at half fees, but gave us the free use of a lecture room and museum. For three years this arrangement continued, there being an average attendance of about seven pupils. The Board about this time concluded to expend some money on models, &c., and the Auzoux preparations were ordered, and they also paid for the ad-

vertisements. On the appointment of the present Council of Agriculture an increased interest was taken in the School, pupils increased in number, a special lecture room was rented in St. James Street, where the lectures were delivered, and a grant was given for the purchase of diagrams, &c. Each year the School became larger, and the distances between the medical school, the infirmary, and dissecting room made the arrangement very inconvenient; and feeling desirous to provide suitable premises, I proposed to the Council that if they would guarantee me $1,800 a year for ten years I would erect a Veterinary College to meet all the requirements; and to-day, gentlemen, we have met to formally open the new School, the arrangements of which I hope will meet with your approval.

I am sorry that everything is not so complete yet as I intend to make it, but if you consider that only four months and a half were allowed the contractors to finish the whole you will think we have done well, and I have to thank them all for the business-like manner in which each has pushed forward the work. I feel confident that the students will find it convenient and comfortable, and I hope the public will find the arrangements for their convenience satisfactory. Having thus attained a most important step in the establishing of the profession on a proper footing, it yet remains for us to obtain a charter for the College, and I hope the Government will fully appreciate the importance of this profession, and will grant us some protection from the degrading associations of quackery, not that we fear the opposition of quackery, the difference between success in treatment of the qualified man and the quack should be so apparent that the most ignorant should distinguish, but at present we have no law to prevent the most ignorant—the most degraded—from calling himself a Veterinary Surgeon, and we thereby suffer as a profession.

It is my intention during the coming session of Parliament to apply for a charter, which will confer upon us, as a profession, privileges which will distinguish us from the barefaced empiric, and I hope I can rely on the support of all parliamentary friends present in obtaining the charter.

So much for the historical part of the profession. In the next place, I wish to give you a correct idea of what is comprised in the study of veterinary science, and I think I can do that best by showing you how intimately connected the study of human medicine is with veterinary science.

The Professor then dwelt learnedly upon the principles of veterinary science, and then proceeded with the following practical suggestions to the students present:

To the young gentlemen present to-day, for the first time as

students of the College, I wish to say a few words with regard to their studies. From the remark just made you will see that you have work to do before you can master your profession, and you must not expect that by your mere attendance here you will become proficient in the science. Let me assure you that there is no study requires closer application or such individual attention as that you are about to be engaged in. That regular attendance on the lectures, and close attention while listening to them, are necessary, I need hardly tell you; but of equal importance is the diligent private study of your books. By referring to the annual announcement, you will observe that at the end of the first session you are expected to pass your examination in botany or zoology, the second year in chemistry and physiology, and the final examination at the end of the third session on anatomy, materia medica, and veterinary medicine and surgery. It is impossible to speak too forcibly of anatomy and the necessity of your devoting a considerable portion of your time to its investigation. I need hardly tell you that it is in the dissecting room alone that such knowledge can be gained; a room for this purpose has been fitted up, where demonstrations will be given daily, and where every one must prosecute the study for himself. At first it may seem rather disagreeable work to those of refined tastes, but I have no doubt you will soon become so much interested in it as to forget these paltry objections, when you come to know the beautiful structure and wonderful mechanism of the animal machine, such exquisite delicacy of structure and wonderful adaptation of means to an end as can only be equalled by the inimitable provisions which maintain it in health, and repair it in disease. Anatomy, therefore, shall occupy a prominent part of our attention, and we hope by studying together and lending mutual assistance to be able to make some progress in the study. Of no less importance is a thorough knowledge of the interesting science of physiology, which treats of the functions and uses of the different parts of the animal body. Now, gentlemen, when you come to consider that our therapeutic or curative treatment is entirely deduced from the diagnoses arrived at by a careful examination of the symptoms presented by the past, the previous history of the case and the effects on the system, without the assistance of communicative intelligence to apprise us of the precise position of the pain, the abnormal sensations and the effects of the remedial agents employed, it cannot but appear how essential is a thorough knowledge of healthy processes and concurrent phenomena taking place in the past. Depend upon it, gentlemen, unless you pay particular attention to physiology, no matter how well you are posted in anatomy, you never can understand the changes taking place. The

importance of the science of chemistry needs no comment; without it our knowledge of physiology is incomplete, as most of the functions of the different organs are subservient to different chemical processes. Pathology of disease can never be understood, unless we understand the chemical constituents of the various fluids and tissues, as almost all diseases are dependent on or are accompanied by chemical changes. The air the animal breathes, the food he eats, the water he drinks, are all liable to chemical changes, a knowledge of which is indispensable; and unless familiar with the natural or healthy composition, how can we detect deleterious chemical alterations? This important subject will be taught you by a gentleman whose scientific attainments and amiable disposition have won for him the love and esteem of all who know him, students in particular—Professor Craik. In this course inorganic chemistry is fully treated, and a large portion of the course is devoted to organic chemistry and its relation to physiology. The branches of physics bearing upon or connected with chemistry also engage the attention of the class. For experimental illustration abundant apparatus is possessed by the Professor, which need not here be enumerated. *Materia medica*, or the study of the physical properties, preparation, physiological and therapeutic actions of all the medicinal agents used in veterinary science, with their uses, doses, and antidotes, will be illustrated by a full collection of specimens carefully collected and preserved. Mr. Brennan, who is a graduate of this College, will lecture on this subject, and take special charge of the laboratory. That you should pay particular attention to this important branch of study I need hardly tell you. Veterinary medicine and surgery, which, from a practical point of view, I dare say you will look upon as the most important study of the whole curriculum, embrace—the *summum bonum* of veterinary science, including the study of the nature, origin, propagation, transmission, prevention, symptoms, and treatment of all the diseases, accidents, malformations, or other conditions, which are themselves, or induce, any departure from health, or interfere with the value of the animal. I regret to say that, being compelled in the meantime to undertake to include in the course the diseases, &c., of all the domestic animals, it is necessarily incomplete. I hope the day will come when we shall be in a position to subdivide this subject by the appointment of a lecturer on cattle pathology. However, gentlemen, I hope I may rely on your co-operation by careful study and regular attendance, so that time may not be lost in recapitulation. This course will be illustrated by preparations and diagrams in the class-room and by practical demonstrations and clinics in the infirmary and yard. I have purposely left the subject of botany to the last, that I might have an opportunity

of impressing upon you the importance of this subject in connection with our profession. As you are well aware, the subjects of our care are mostly graminiverous, consequently our knowledge of plants cannot be too extensive. Many of our medicines are of vegetable origin, and can only be properly known by a knowledge of botany. Botany teaches the classification of plants into orders and subdivisions, the structure and uses of each. It is, in fact, the natural history, anatomy, and physiology of plants. This course is illustrated by specimens, diagrams, models, and the microscope, and special instructions will be given in microscopical examination of tissues. Students have access, without any additional fee, to the lectures in zoology in the Faculty of Arts, and to the Natural History Museum of the University, and the Museum of the Natural History Society of Montreal. It is only necessary to mention the name of Professor Dawson, Principal of McGill University, as the lecturer in botany and zoology, as a guarantee for the very highest possible instruction on this important subject. To the world-wide reputation of Canada's greatest scholar any feeble remarks which I might make would add nothing, but I hope it will not be considered out of place for me here in passing to refer to the great liberality with which Professor Dawson has always aided us in furthering this School from its first conception to the present time; and I wish here publicly to acknowledge that if we have made any progress it is in a great measure due to the assistance and support of Principal Dawson and the Dean and Medical Faculty of McGill University. Lastly, your attention will be occupied occasionally with microscopic work, and I hope you will all take a lively interest in this study, as it will aid you much in your studies, and prove of great value to you afterwards.

At the conclusion of the lecture several brief addresses were delivered, by Dr. Dawson, Mayor Hingston, A. W. Ogilvie, and T. White, junr. The meeting, after a few more remarks from the Chairman, was brought to a close.—*Montreal Gazette.*

YORKSHIRE VETERINARY MEDICAL SOCIETY.

The concluding quarterly meeting for the current year was held at the Queen's Hotel, Leeds, on Wednesday, the 3rd November; the President, Mr. J. W. Anderton, in the chair. There were also present Messrs. Freeman, Jas. and Josh. Naylor, J. S. Carter. Fallding, Patterson, Peter Walker, Scriven, Cuthbert, Ferguson,

Murdoch, and Broughton. Mr. Kingston and two of Mr. Murdoch's pupils were present as visitors. Apologies for non-attendance were received from Messrs. Dray, John Freeman, John and W. G. Scholfield, and John Faulkner.

The minutes of the previous meeting were read and confirmed.

Mr. George Wm. Carter, Bradford, was nominated as a member.

Mr. Kingston read an elaborate and exceedingly practical paper upon "The Diseases of the Feet in Horses." In the discussion that ensued the diseases corn and canker were principally dwelt upon, most of the members present taking part in the debate. It was decided to discuss the diseases, laminitis and navicular disease at the annual meeting in January.

The *President* proposed, and *Mr. Murdoch* seconded, a cordial vote of thanks to the essayist, which was carried with acclamation.

The *Treasurer* submitted the financial account for the year, which showed a balance in hand of £68 3s. 3d. The election of officers for 1876 was then proceeded with. Mr. Chas. Patterson, of Dewsbury, was chosen *President;* Messrs. Anderton, Fallding, and W. G. Scholfield, *Vice-Presidents;* Mr. Cuthbert, *Treasurer;* Mr. Broughton, *Secretary*.

Mr. Broughton proposed, and *Mr. Naylor* seconded, a vote of thanks to Mr. Anderton, for the exemplary manner he had carried out the duties of President.

Refreshments, furnished at the expense of the Leeds members of the Society, wound up an enjoyable and pleasant gathering.

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

The quarterly meeting was held in the London Hotel, St. Andrew's Square, Edinburgh, on Wednesday, 15th September, at half-past two o'clock.

Professor Walley, President, in the chair.

Present—Professors Williams and Baird; Messrs. Borthwick, Aitken (Edin.), Balfour, Cumming, Comrachie, Young, Black, Rutherford, Balfour, jun., Heatley, and the Secretary.

Mr. Storrie, of East Linton, sent a letter regretting absence.

Mr. Heatley, Pathead, was elected a member.

Several interesting cases of open joint, &c., were related.

Mr. Rutherford read his paper on "Frostbite." The remarks afterwards made tended to show that the views taken by Mr. R.

as to the nature of the complications resulting therefrom, and the treatment adopted by him, met with the approval of those present; Professor Williams and others did not, however, assent to the extreme thinning of the crust at the upper part of the foot in severe cases. A cordial vote of thanks was awarded to Mr. Rutherford for his paper, with the request that it be published in the *Veterinarian* and in the *Veterinary Journal*.

Some remarks were afterwards made on "Rupture of the Diaphragm." *Professors Walley* and *Baird* looked on rupture of the diaphragm as a very common cause of sudden death, and stated that it was difficult to distinguish between *ante-* and *post-mortem* rupture in such cases. A few of the members, however, were rather sceptical as to this state of matters, believing that the diaphragm, if ruptured during life, would always present a different appearance from that seen when torn after death. The subject was rather important in a legal point of view. The case that gave rise to the remarks was that of a high-priced four-year-old draught horse lately purchased, which, when drawing a light load of grass from the field, fell down and after a short struggle died. The animal lay (in September weather) for nearly twenty-four hours before being opened. The abdomen was distended and the diaphragm ruptured. The veterinary surgeon for the seller was at first disposed to consider the rupture as the cause of death, while his professional brother on the opposite side, judging from the appearance of the rupture and other circumstances, could only look on it as a *post-mortem* lesion. Fortunately there was no need to enter into the merits of the case, as further examination showed that the horse had been choked or strangled by the pressure of the collar.

At next meeting Mr. Balfour, of Markinch, kindly promised to read a paper.

Veterinary Jurisprudence.

SOUTHAMPTON POLICE COURT.

September 15th.

Before Mr. J. H. Cooksey, Alderman Lamb, and Tucker, Mr. A. Pegler, and Mr. D. Davis.

GLANDERED HORSES.

Edwin Gregory, of Jersey, was charged by Mr. J. G. Gould, acting as the inspector of the Urban Sanitary Authority under the provisions of the Contagious Diseases (Animals) Act, for exposing certain horses for sale in the Southampton Cattle

Market which was suffering from a contagious or infectious disease. Mr. Killby appeared for the defendant.

Mr. R. S. Pearce (Town Clerk), who conducted the case for the prosecution, said this was a case which had already been before them, and had stood over until that day. The charge at first was not upon an information, but rather upon defendant's desire to attend to answer the charge that would be made upon a summons, and it was a charge of having exposed in the market at Southampton certain horses infected with a contagious or infectious disease, and the case on Saturday week was adjourned until that morning, the summons being accepted on defendant's behalf by Mr. Killby. The information was laid under section 57 of the Contagious Diseases (Animals) Act, which enacted that any person exposing in a market any animal affected with any contagious or infectious disease, unless he shows that he does not know that it was so infected, is liable to a penalty, which latter was shown in section 103, this being £5 each horse, or a maximum penalty of £20.

The evidence would show that upon the 3rd September Mr. Gould was on duty in the Southampton Cattle Market, as inspector, and found three horses suffering from a disease known as the glanders. It was only for him to show that these horses belonged to defendant, and were so exposed for sale, and defendant being a horse dealer must know whether the horses he offered for sale were suffering from a contagious disease or not. But for Mr. Gould the disease might have been spread throughout the country. This thing must be stopped at once, and the very fact of this Act being passed showed that the intention of Parliament was to stop this.—*Mr. Killby* said he was without any information, and he wished to know what number of horses they were charged with.—*Mr. Pearce:* Three horses.

Mr. Pearce then called Mr. George James Gould, veterinary surgeon, and inspector under the Contagious Diseases (Animals) Act, 1869, for the borough of Southampton, appointed by the Town Council. He stated that on the 3rd September (Friday), he was on duty in Southampton Cattle Market, near the Railway, that being the regular market day, and there were sheep, horses, pigs, and cattle for sale. He saw three horses there, two horses and a pony, which he found were infected with glanders, which was a contagious disease. Two of the three were together, and the pony was being led to the same stable, and he stopped it. There were two greys alongside the two affected horses, and he examined those two grey horses, and found nothing to show, but he had his suspicions, from the appearance of the membranes of the nostrils, that these also were infected.

As a professional man he thought the pony had been suffering for at least twelve months, the bones of its head being rotten. The two black horses had been suffering from six to eight months he should think. This disease is visible to the naked eye by the enlargement of the gland under the jaw. In the earlier

stages of glanders the enlargement would come and go again, but these cases were chronic, and, therefore, this would not apply to these cases. The size of the enlargement in these horses would be about that of a walnut, and hard, adhering to the jaw. The two black horses had been blistered on this enlargement to try to disperse it. They would blister a horse's jaw for anything else, but the enlargement would disappear. It would not disappear in a case of glanders.

He inquired whose the horses were, and on being told, he saw the defendant about a quarter of an hour after, having moved the horses for safety. He said to defendant he was sorry to find these three horses suffering from glanders, and defendant said they were his, and asked what he could do? He told him, under the Act of Parliament, he was obliged to have the three destroyed, and no doubt, as regarded the other two, they could arrange to have them locked up somewhere. He asked if he would be allowed to call in another opinion as to the whole of the horses, and he told him yes, and recommended him to have an independent man from a distance. Defendant told him he brought them from Jersey, and that he wished he had had them destroyed twelve months ago, and he would have been money in pocket, but he had taken the advice of one and another, and said it was a bad job.

Defendant brought down Mr. Barford, who agreed with him as to the three, and it was arranged about the other two. Witness sent for Detective Hunt, who took charge of the horses. In the afternoon he again saw the defendant in Hunt's presence, and told him he never saw worse cases in his life, and defendant offered no objection to the horses being destroyed, and paid for the ground to bury them. The horses were removed to Highfield. Three of the horses were destroyed next afternoon (Saturday). In front of where the horses had been standing there was a large quantity of matter, enough to contaminate the whole town. No person was there to represent defendant.

From his *post-mortem* examination the pony's lungs were full of tubercles from the size of a pea to that of a walnut—three or four hundred in each of the lungs. The internal bones of the head were rotted away with the glanderous matter, being like a pap. The head was full of matter and one nostril full of ulceration, which was visible. The others were similar in character, the lungs being worse, but the head not so bad as the pony. The defendant is a livery-stable keeper. If the matter came into a human being's eye or into a cut that person would die. He would sooner kill a mad dog than a glandered horse. Defendant came over with other horses.

By Alderman Lamb.—This is an incurable disease. It never has and never will be cured.—Cross-examined by Mr. Killby: Defendant did not object to the horses being killed. The symptoms were enlargement of the submaxillary glands and ulceration of the nostrils. The discharge was a thick gluey discharge, and

was different from other diseases. It was as different as chalk from cheese, and a man used to the disease could detect the difference between the discharge in glanders and that in influenza. In the former it was a dark yellow, and it was not so in the latter. Mr. Gould was further cross-examined at length as to the difference between the symptoms in glanders and influenza. Ulceration of the nostril was an infallible test. Inoculation would kill, but it might be chronic or acute disease so inoculated. There must be contact with the matter either through a wound or one of the serous membranes. The other horses were in quarantine or isolated in accordance with the Order of the Privy Council. One of them had an enlargement of the submaxillary glands, and it was a suspicious case.

Re-examined.—In influenza there was a cough and cold, and enlargement of the glands of the throat, so that the animals could hardly eat. These horses ate hard hay heartily.

By Mr. Tucker.—Had no doubt about the case, and it was the worst he ever saw.

For the defence *Mr. Killby* said this offence with which his client was charged was a very serious one for him, and he was sure the magistrates would not allow any impression formed upon their minds by what they had heard or read to influence them. They must first have it proved that the animals were suffering from glanders, and next that his client knew of it. In support of the charge that they were glandered Mr. Gould had been examined and given his views, but he thought he should produce witnesses who would prove most conclusively that the horses were not suffering from glanders, but some other complaint, and they might reasonably say that Mr. Gould had made a mistake. The conclusive test of glanders was inoculation, and if any animal or man was inoculated from a glandered horse he would die. Now he was in this position, that he could prove to them there was very great doubt in the matter, and he should say the horses were not glandered, and the reason he had for saying this was not alone from medical testimony, but from the important fact that a person who had charge of these horses had a wound in the hand, and was accidentally inoculated, and yet he lived, and again an animal—a rabbit—had been inoculated, and was now alive.

Mr. Pegler.—But they might live three weeks or three years.

Mr. Killby then continued that the next question was whether his client knew the horses had the glanders, supposing them to be so diseased. If there were any doubt in the minds of professional men as to whether it was or was not glanders, his client could not be expected to know it, and there were other circumstances which, to his mind, most conclusively proved that he was not aware of it. He was a postmaster in Jersey, and had a large number of horses with which those brought here were mixed, besides which he took into livery the horses of gentlemen, and was it likely he would be so absurd, not only to risk all his own horses,

but those the property of others? He had sought the best professional advice and upon that he had acted. He referred to the way in which his client had conducted himself throughout, inviting full inquiry, which was not inconsistent with his not knowing that the horses had the glanders, and concluded by saying he was instructed by his client to say if he had thought of the horses' having such a disease he would never have brought them here.

He then called *Mr. J. D. Barford*, veterinary surgeon, who stated, in answer to Mr. Killby, that he had been in practice between twenty and thirty years. He saw the five horses on Friday, the 3rd of September. He found the pony with a copious discharge from the nostrils and enlargement of the gland under the jaw, otherwise appearing in very good health. The two black mares came next, and he found them with the slightest possible symptoms of the enlargement of the glands and the slightest appearance of discharge from the nostril. The two greys he considered in perfect health. He knew Mr. Gregory, who is in a large way of business in Jersey. Twelve months ago—last September—at defendant's request, he went to St. Helier's, and examined sixty horses. On the Friday, the 3rd September, he asked if the pony was examined by him twelve months ago, and defendant said it was. The pony had symptoms sufficient to excite suspicions, but not sufficient to cause him to say it was glandered at one examination, knowing how nearly the symptoms were allied to other diseases. The two black horses should never have been ordered to be slaughtered, the symptoms being so trivial but they were sufficient to have detained them.

By the Chairman.—He said if a public officer he would have followed the same course. The Act of Parliament would act the same in a private as in a public capacity.

By Mr. Killby.—Tubercles were signs of glanders, but not infallible. As to the state of the nostrils in the pony, they were such that it might have another disease. Cold in the head, if it settled into a chronic form, had a discharge like glanders, and diseased bones in the head would produce a discharge more like that from glanders. If these horses had been glandered the horses in the stable would have taken it, and in inoculation, according to his experience, death would take place in ten days. Any ordinary person would not reasonably have supposed either of these horses had the glanders. After hearing the *post-mortem* examination he should say, unhesitatingly, he should have shaken in his opinion as to whether the animal had glanders, and he now had the gravest suspicions whether the animal had them.

By Mr. Pegler.—Would have great doubts as to whether it had the glanders. Would not say whether it was wrongly slaughtered.

By Mr. Pearce.—Had known defendant twelve months since when he was sent for to see his horses that were sick. He found three or four horses ill with symptoms like these, but not exactly.

He considered they were suffering from having got too low in condition, from blood-poisoning.

By Mr. Tucker.—Glanders arose from blood-poisoning.

By Mr. Pearce.—Thought the blood-poisoning was caused from bad drainage. He advised a thorough overhaul of defendant's stables. Defendant lost three or four horses, one of which he ordered to be destroyed because it was in the last stage of this disease of blood-poisoning. In this horse he did not discover any symptoms of glanders. The lungs were not diseased. Blood-poisoning was not contagious, and was curable. Did not know whether defendant had lost any horses since. He recognised one black and one white horse as being among those he saw twelve months ago. Left defendant full instructions for their treatment, and some had been cured. The two horses he recognised were then worth about £30, and he considered the grey worth £25 now.

By Mr. Cooksey.—Would not say that blood-poisoning might not have resulted in glanders.

Mr. Cooksey.—Defendant told me the five horses were worth £60 at the last time.

By Mr. Pearce.—The cause of the blood-poisoning was from debility. Told Mr. Gould what his opinion was. Did not coincide with Mr. Gould that the horses were suffering from glanders, but said there was sufficient in the pony to raise suspicion. There might be enlargement of the gland from sore throat, but neither of these had a sore throat. His examination lasted half an hour.

By Mr. Pegler.—Advised his client to have the three horses destroyed to save trouble and expense, knowing the powers of the inspector. Had in reality concurred with Mr. Gould, and did not protest against the three horses being killed.

Mr. John McCabe, called, said he was a veterinary practitioner, but was not qualified, having no diploma. He resided in Jersey, and attended Mr. Gregory's horses. Saw these horses the morning before they were left, and did not consider they were suffering from a contagious disease. The pony was suffering from a discharge from the nose. He had inoculated a rabbit ten days before from the pony, to see if it was the glanders, and the rabbit was alive now. If the rabbit had died the pony would certainly not have been shipped across. He had been accidentally inoculated a month since from another horse similarly affected, and that horse had recovered, and he was not affected.

By Mr. Pegler.—Believed that the authorities in Jersey had sent to the Privy Council for an inspector to visit the stables. He inoculated the rabbit because of the talk about affected horses.

By Mr. Cooksey.—If I had been consulted as to whether the horses should be shipped to Southampton I should have said it was a risk.

By Mr. Davis.—Mr. Gregory had not told him he was going

to send the pony, but if he had he would have advised him not to do so.

By Mr. Pearce.—Was a little surprised to find the horses had been sent across. Might since have said to Mr. Gregory, senr., that it was a risk. The defendant knew the animals were suffering from some disease. Considered they were suffering from nasal gleet. More or less the three horses had the swelling under the jaws, but this might result from influenza. These horses might have been suffering from glanders and he not have known it.

Mr. Truckle, veterinary surgeon, Salisbury, gave evidence that these symptoms to a certain extent were similar in other diseases as well as glanders. He agreed with the opinion of Mr. Gould, and the *post-mortem*, except that about the bones of the head. With the symptoms described he would consider it a very suspicious case.

After a brief consideration *Mr. Cooksey* stated that the magistrates were clear in their minds that the horses were suffering from glanders, and that the defendant knew it, and therefore they fined him £15, being £5 for each horse, and the costs, or six weeks' imprisonment.

Mr. Killby stated that he would appeal.

COUNTY COURT, CHIPPING NORTON.

Before — HARRINGTON, *Esq.*, *Judge*.

The bi-monthly sitting of this court was held September 29th.

ALLEGED BREACH OF WARRANTY.—DISEASE OF THE PASTERN BONES?

HODGES *v.* JEFFRIES.

THIS was an action brought by Mr. James Hodges, steward to Lord Sherborne, against Mr. Jeffries, horse dealer, of Salford, for £18 14s., being the difference of the price of the horse, and that for which he was sold (together with the expenses attendant on the sale and livery) by auction at Chipping Norton Fair. Mr. Mallam, of Oxford, appeared for defendant, and Mr. H. Turner, Birmingham, for Mr. Hodges.

James Hodges, land surveyor and bailiff to Lord Sherborne, deposed: I have known the defendant as a horse dealer for four or five years, and have had dealings with him. Before Christmas I asked him to look me out a real good cart horse; I saw the defendant at Sherborne in March, and afterwards saw the horse at Mr. Hirons' farm at Salford, near Chipping Norton; defendant recommended the horse as being a warranted good horse. I approved of the horse some four or five days previously to the 29th March as far as I could judge. I told the defendant and Mr. Hirons I should not buy it unless my carter first saw it; my carter came back, and in consequence of what he said I sent

for the horse, and the same evening Mr. Jeffries came to my house to settle for it. In defendant's presence the carter said he was very doubtful about the horse's forelegs; Mr. Jeffries replied that the horse was perfectly sound. He said "You can try him, and if he's not exact you can allow me £2, and I'll take to him again." We went into my office, and I settled for it. Defendant at first objected to give a receipt, but I insisted on having one, which I wrote out and he signed. I worked the horse about for half-days the first week, with a broad harrow; he appeared to work well on the land. On the following week he was sent to work on the road to draw stones from Windrush. He worked that afternoon apparently well. Next morning in consequence of a communication from the carter I went to look at the horse, but found nothing. I then told the carter to work him carefully the next day, and on the second load of stones being brought, I observed that the horse was lame in both legs. After writing a letter to Mr. Jeffries complaining of the unsoundness of the horse, a reply was received from Mr. Jeffries stating that the horse was sold to him by Mr. Hirons. The horse was sent back, and I saw the defendant, to whom I stated that in consequence of the lameness of the forelegs I could not keep him; Mr. Jeffries referred me to Mr. Hirons. I went to Mr. Hirons' house and took the horse, and asked the defendant to go with me to see if he could compromise the matter, but he told me was not at home. I went to Mr. Hirons' house and waited until he came back. Defendant met Hirons before I saw him. I told Hirons the horse was not sound, when he said he supposed we had been messing him about. Both refused to take the horse back, and in consequence of that I took the horse away. I brought the horse straight to Chipping Norton, and had him examined by Mr. Irving, and in consequence of what Mr. Irving told me I put the horse out to livery for a fortnight, and the horse was sold at Chipping Norton market by public auction.

In answer to Mr. Mallam—When I went to look at the horse it was ploughing. I said to Mr. Hirons, "I suppose you'll warrant the horse?" To which Mr. Hirons replied, "It is perfectly sound; it's never been off the estate, and I bred it." Mr. Hirons refused a warranty, and I said "If you think the horse is perfectly sound there's no need for a veterinary surgeon." Before Mr. Hirons said the horse was perfectly sound I said I should have Mr. Tombs to see it. Mr. Hirons did not suggest that the horse should go to a veterinary surgeon, nor did he say that if the horse was sound that it was mine, and if unsound it should remain where it was. The whole of the receipt was written by me except the signature. The words *warranted sound* was written before Jeffries signed. Mr. Jeffries did not ask me to read the receipt; I read it voluntarily; I read over the receipt first without the words *warranted sound*. I inserted those words with the consent of the defendant.

Mr. Peter Irving, veterinary surgeon, Chipping Norton, said—I was called in by Mr. Hodges to examine the horse at the Fox Inn. I found he was lame, and on further examination I found a bony deposit round the coronet. At the present time I consider he has sidebones. Inflammation of the cartilage will produce the deposit complained of. Before Mr. Blake purchased the horse for Mr. Brassey I did not dissuade him from buying it.

This being the case for the plaintiff—

Mr. Jeffries, the defendant, was called, and said—When Mr. Hodges came to my house I told him Mr. Hirons had got a cart horse to part from and took him over to see it. He went to Mr. Hirons' house with me, and we went in company with Mr. Hirons to the team, and before we got to the team complainant pointed out the horse. Mr. Hodges asked Mr. Hirons on the way home the price of the horse, to which Mr. Hirons replied 90 guineas. Mr. Hirons refused to give a warranty after Mr. Hodges had told him that the horse would be required for stone and timber drawing, but if it was going on to a farm he would give a warranty, I proposed having a veterinary surgeon, and named Mr. Tombs, of Barrington. Mr. Hirons consented, and said—If the horse was sound it was their horse, but if not, he was to remain where he was: he was to be examined before leaving Mr. Hirons' farm. I suggested that Mr. Hodges' carter should see the horse. On the morning of the 19th Mr. Hodges purchased the horse of Mr. Hirons for 90 guineas. On the same day I had occasion to go to Mr. Sherborne, when I called on Mr. Hodges and paid him for some horses I had sold for him, and he deducted the £90. I told him I could not be at the trouble of showing the horse for nothing and he paid me 10s. for my trouble. Before signing the receipt he read it, but no mention was made of the words repecting a warranty. I was never asked to warrant the horse.

In answer to Mr. Rogers—I believe the words in the receipt srespecting the warranty are a forgery. I paid Mr. Hirons £94 10s. and he gave me £4 back. I saw the blotting-paper used directly I had signed the receipt.

Mr. Hirons—I live at Salford, and am a farmer. The horse in question I bred; it was coming four years. I had not sold the horse to any one prior to Mr. Hodges coming to see it. When he came to see it he asked me what I should want for the horse. I told him I should not sell him for £80. After I got home he again asked the price and I told him 90 guineas, and he said "That's business." I refused to warrant the horse to him on account of the nature of the work he was going to put him to; if it were going to work on a farm he would give a warranty. Mr. Jeffries then suggested a veterinary examination, and Mr. Hodges named Mr. Tombs, whom I expected would come over. Mr. Jeffries paid me £90, I having previously arranged to give him £4 10s.

Mr. Verney, veterinary surgeon, of Blockley, and *Mr. Perrins*, veterinary surgeon, of Worcester, both of whom had examined

the horse that morning, spoke positively as to the soundness of the horse. There was a congenital enlargement of the pastern bones, which would not interfere with the horse's usefulness.

Mr. Andrew Blake said,—On 20th April I bought the horse in question for Mr. Brassey, for £82. He has been regularly used on the farm and roads; he has been a ready free worker. I observed no stiffness about his forelegs. I was offered £3 on the day for the bargain.

His Honour stated that in the face of the veterinary evidence, and that of Mr. Blake, he must give a verdict for the defendant. It was not proved to him that the horse was unsound at the time of sale.

Plaintiff elected to be nonsuited.—*Oxfordshire Weekly News.*

SETTLE PETTY SESSIONS, Tuesday, November 16th.

FOOT-AND-MOUTH DISEASE AMONG SHEEP.

Before J. Birkbeck (Chairman), C. Ingleby, T. E. Yorke, and H. Christie, Esq.

John Kitchen, residing at Kilnsey, was charged with having driven on the highway, in the townships of Giggleswick and Langcliffe, on the 3rd inst., four sheep labouring under the foot-and-mouth disease.

Mr. Superintendent Copeland briefly stated the case, from which it appeared that defendant drove, on the day in question, a number of sheep from Kilnsey to Giggleswick; and from information he received he went, along with Mr. Sudell, the veterinary surgeon appointed for this district, to inspect the sheep in a field occupied by Mr. John Wray, at Giggleswick, when on examination several of them were found to be very lame, and appeared to be suffering from the foot-and-mouth disease.

Mr. William Hunter, a farmer, residing at Cowside, near Langcliffe, was called in support of the information, and stated that he saw defendant pass his house on the 3rd inst. with some sheep. Noticed them as they passed, and from their appearance concluded that a dozen or more of them were in the foot-and-mouth disease. Sent a boy to clear the road, and afterwards to give information to the police. Had been a farmer upwards of forty years. On cross-examination by Mr. Berry (Bradford), who appeared for the defence, the witness stated that he had had considerable experience in foot-and-mouth disease, and had no doubt whatever the sheep were suffering from it at the time he saw them.

Mr. Thomas Sudell, veterinary surgeon, residing at Settle, stated that he examined the sheep in question on the 4th instant, and found five or six of them suffering from foot-and-mouth disease. Three of them bore distinct marks of blisters in the mouth, and another had then blisters in its mouth. The feet were also very bad. Most of them were laid down, and were

very lame. After describing the symptoms the witness stated that he had not the slightest hesitation in saying that these animals were suffering from the foot-and-mouth disease. On a subsequent examination of the sheep he found two of them suffering from the foot-and-mouth disease.

The witness was cross-examined at some length by Mr. Berry, with a view of showing that the sheep were suffering from foot-rot only; but witness adhered to his former statement that the animals were suffering from foot-and-mouth disease.

Mr. Berry, for the defence, stated that he should in the most unmistakable manner show to the Bench that the animals were only suffering from the disease known as "foot-rot." He then proceeded to call the following evidence:

Truman Brown, a farmer, residing at Kilnsey, stated that the sheep came from the farm of Mr. Thomas Sharp, a neighbouring farmer, who had been ill some time, and that he and Mr. Nowell assisted him in his business. That there was no foot-and-mouth disease in the district, and that the sheep had been sold to Mr. Watson. Some of them were ailing from foot-rot, but none of them had the foot-and-mouth disease. Saw them the day they left. They could not possibly have been driven to Settle if they had been suffering from foot-and-mouth disease. Heard they had been seized, and came over to Settle on the 9th inst., and got an order for the removal of some of them; the remaining twelve were kept, and were there yet. On his cross-examination witness stated that Mr. Sudell only pointed out one which had a blister in the mouth, and gave it as his opinion that the sheep in question were only suffering from foot-rot.

George Metcalf, veterinary surgeon at Settle, was the next witness called, and stated that he saw the sheep on the 10th inst., and examined them, and concluded they were suffering from foot-rot. On his being examined he said that he opened the mouth of every sheep. Saw one mark in the mouth of one sheep, which he thought was caused by some abrasion. Found no such symptoms as those described by Mr. Sudell.

Mr. Joseph Carter, veterinary surgeon, Bradford, stated that he had been in practice as a veterinary surgeon since 1839, and had had considerable experience. Saw the sheep on the 11th inst., and carefully examined them, and found them suffering from foot-rot, but he found no symptoms of foot-and-mouth disease.

Mr. Cuthbert, a veterinary surgeon at Leeds, on being called, said that he had examined the sheep on the same day as last witness, and also that morning, but did not find any trace of foot-and-mouth disease, although some of them were suffering from foot-rot.

This being the whole of the evidence, the Bench decided to dismiss the case, and on Mr. Berry's applying for costs they were granted.

Isaac Hully, a farmer, at Chapel House, near Bentham, was

also charged, under the same Act, with having, on the 2nd inst. (Stot Tuesday fair), exposed for sale, at Settle, a number of lambs said to be suffering from the foot-and-mouth disease. Mr. Sudell was again called in support of the information, and Mr. Welch, veterinary surgeon, Kirkby Lonsdale, and Mr. Anderton, veterinary surgeon, Skipton, were called for the defence, and both agreed in stating that the animals were not suffering from the foot-and-mouth disease, but from foot-rot. This case was also dismissed, but without costs. Mr. Berry appeared for the defence.

The information against James Swinbank, a farmer, residing at Malham, for having neglected to give notice of the existence of the disease on his farm, was withdrawn.

We are requested to state that Mr. Sudell, the veterinary inspector for this district, has resigned his office.—*Lancaster Guardian.*

ROYAL COLLEGE OF VETERINARY SURGEONS.

The following contributions have been recently received for the—

COLLEGE FUND.

	£	s.	d.
Aubrey, Thomas, Esq., Salisbury . . .	2	2	0
Cooper, R. Powell, Esq., Lichfield . .	3	3	0
Hall, Robert, Esq., Stockton-on-Tees . .	2	2	0
Jones, Edward Marshall, Esq., Tetbury, Gloucester	2	2	0
Santy, Arthur H., Esq., Norwich . .	1	1	0
Swann, Lister, Esq., Upwell, Norfolk . .	2	2	0

Subscriptions may be sent to the Secretary, Mr. W. H. Coates, either by post-office orders, made payable at the district post-office, High Holborn, or by cheques crossed, "Sir Samuel Scott, Bart., and Company, London." An official receipt will be forwarded in return.

OPENING OF THE EDINBURGH VETERINARY COLLEGE.

The winter session of Dick's Veterinary College was opened this afternoon in presence of the Lord Provost and Magistrates and a fair attendance of the public, in the Council Chambers, with an introductory address by Dr. M'Kendrick, one of the professors. In the course of a long address the lecturer alluded to

the necessity for the extension of the curriculum from two to three or four years, which, though pressing a little at first on the poorer class of students, would tend to elevate the veterinary profession, and fit the students better for dealing with the now very valuable stock of the country. If the students, he said, spent more money in training, they would have to charge higher fees in practice, which he believed owners of stock would not grudge, if it secured, as it would, greater efficiency on the part of veterinary practitioners.—*The North British Agriculturist*, of Oct. 27th.

ADDENDUM TO THE LIST OF FRESHMEN AT THE ROYAL VETERINARY COLLEGE.

The names of the following Freshmen were omitted from the list published in our last number in consequence of the candidates not having reached London in time for the first Matriculation Examination—

Mr. Thos. E. J. Lloyd.
„ M. C. Kennedy.
„ Jno. Hazel.

OBITUARY.

We have to record the death of Mr. C. S. Romains, M.R.C.V.S., Leith, and Inspector to the Veterinary Department of the Privy Council office at that port. Mr. Romains was born at St. Petersburg, and being educated for the profession of veterinary medicine, he in due time obtained the diploma of the College in that Capital, and subsequently entered as a student at the Edinburgh Veterinary College, and passed his examination in April, 1847, as a member of the Royal College of Veterinary Surgeons. He practised with much success in St. Petersburg, and as private veterinary surgeon to the Emperor. His health failing he returned to Scotland, and took a prominent part in the inquiry respecting the introduction of the cattle plague from Russia. He also enjoyed the personal friendship and confidence of the late Professor Dick, whom he often assisted in the investigation of disease.

We have also to record the death of Mr. Francis Storie, M.R.C.V.S., East Linton, Haddingtonshire. His diploma is dated Edinburgh, 1827.

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